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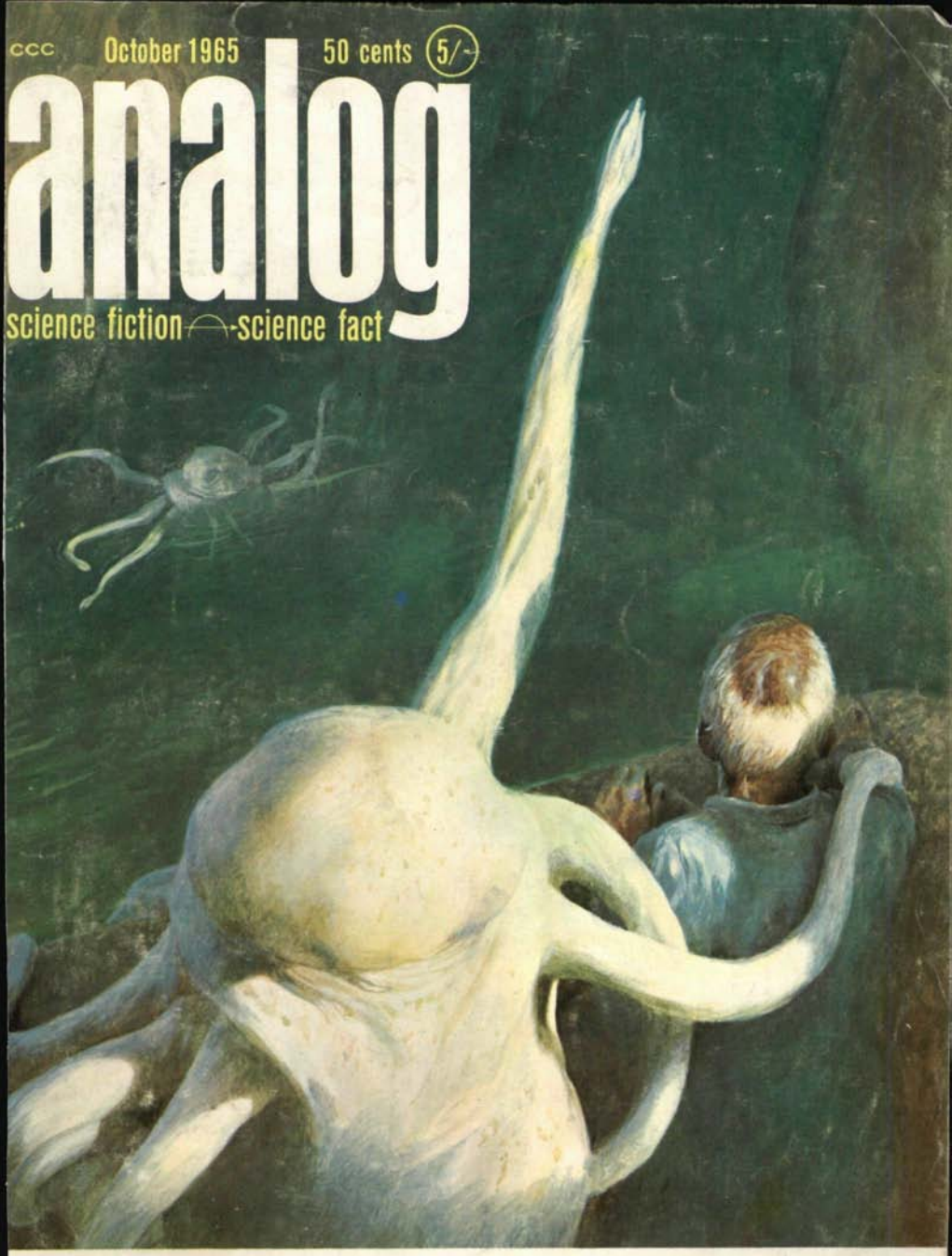

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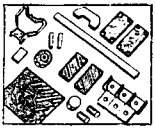

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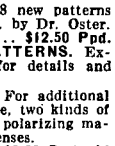

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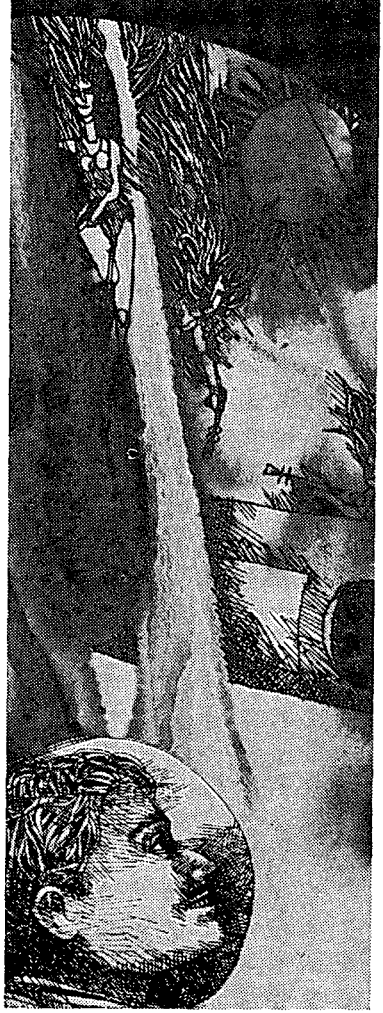

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THE NATURE OF LITERATURE

Editorial by John W. Campbell

Since my degree is in Physics, naturally it is held that I have no training fitting me to make comments on the Liberal Arts fields, or discuss Literature.

It's an interesting sort of idea, really; the fact that I spent four years studying the physical sciences is held, somehow, to prove that the thirty-five years spent actually working and making a living in a field of literature doesn't count. While someone who spent perhaps as much as seven years getting a Ph.D. in Literature—but never writing any—is held to know far, far more about the subject.

Being somewhat irked by that slightly irrational attitude, I'm going to take advantage of the fact that thirty-five years of practical work in the field has, at least, given me a platform from which to talk.

What *is* Literature?

The pragmatic definition-in-action of Literature today is, "Literature is what the self-appointed members of the mutual-admiration-society called Litterateurs say it is."

Maybe it's my basic engineering training showing through; maybe they're right in saying a physical science training makes one incapable of understanding the fine and delicate nuances of True Literature —but I keep noticing practical matters.

Like how many graduates of college courses in Literature, English, Journalism and the like actually come out in the world *and become successful as writers?*

And by "successful" I'm using the uncouth standards applied to other professions. A "successful" doctor is one whose patients usually get well. A "successful" lawyer is one who makes a living by satisfying his legal clients sufficiently that they pay him. A "successful" engineer is one whose bridges don't fall down, whose reaction vessels don't blow up, or whose computers are reliable, efficient, and fast, so that people willingly pay them for further services. The uncouth and unartistic standard of "Does his output earn the approval of the people around him?"

Compare the number of successful-in-that-sense writers who have degrees in the supposedly-relevant

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Liberal Arts—English, English Literature, Journalism, et cetera—with the successful authors with degrees in Medicine, Law, Engineering, Military or Naval science, or Theology.

Now most successful lawyers took degrees in Law, and most successful Chemical Engineers took degrees in Chemical Engineering—which at least suggests that their schooling had a direct bearing on their success in their chosen field.

Then how come most successful authors took degrees *not* in English Literature, but in some widely different field? Presumably the English Lit student went into that field because he wanted to express himself, to write, to understand and emulate the work of earlier writers. And the small success of those who graduate in those courses suggests that, if anything, those courses tend to *inhibit* writing!

Perhaps those courses—remember I never took one, so I don't know—are sort of Spectator Sport courses. Intended to teach the student how to look at writing, but not how to do it? To make them critics, sort of professional back-seat drivers, rather than workers in the field?

Anyhow, the professionally trained Litterateurs seem to agree that Literature should Live—that the *real* Literature should be remembered and passed on for generations.

As a purely pragmatic test, I think that's a good one—though it *does* make it difficult to test any new novel, play, or poem at this time.

The test the Litterateurs do, in fact, apply is whether or not *they* consider it Literature. If They agree, then it is Literature; if They don't—why, of course it's mere trash.

But who are They? Well, They seem to be a self-perpetuating Board of Examiners; Litterateurs recognize each other as Litterateurs and Critics; anyone who doesn't think as they think obviously Doesn't Belong, and is an Unfit Critic and no *real* Litterateur.

Speaking from the Outer Darkness Beyond the Pale—I think They have a tight little Mutual Admiration Society, and don't know what makes enduring literature.

For example, it's held that someone like James Joyce, who labored over every sentence of every paragraph of every page for month after month . . . now *he* was a *real writer!* Only loving, laborious care for every word, polishing and repolishing for years can make a Great and Enduring Novel.

Yeah? So how's about that multi-million word hack, Bill Shakespeare? Look at the pile of stuff he ground out—and with a quill pen, yet! Obviously not Literature: he certainly couldn't have done a properly laborious job of polishing each word and phrase, when he

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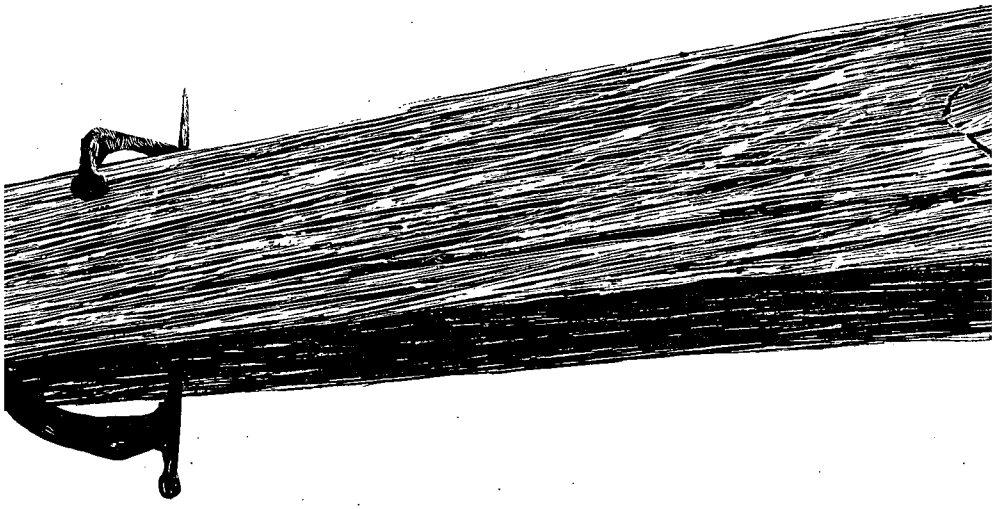

OVERPROOF

Johnathan Blake MacKenzie

Everybody knows what "human" means . . .
until you try to get a definition they'll actually stick to!
Now take the case of the "octopussy" vs. the "baboonoid," seasoned
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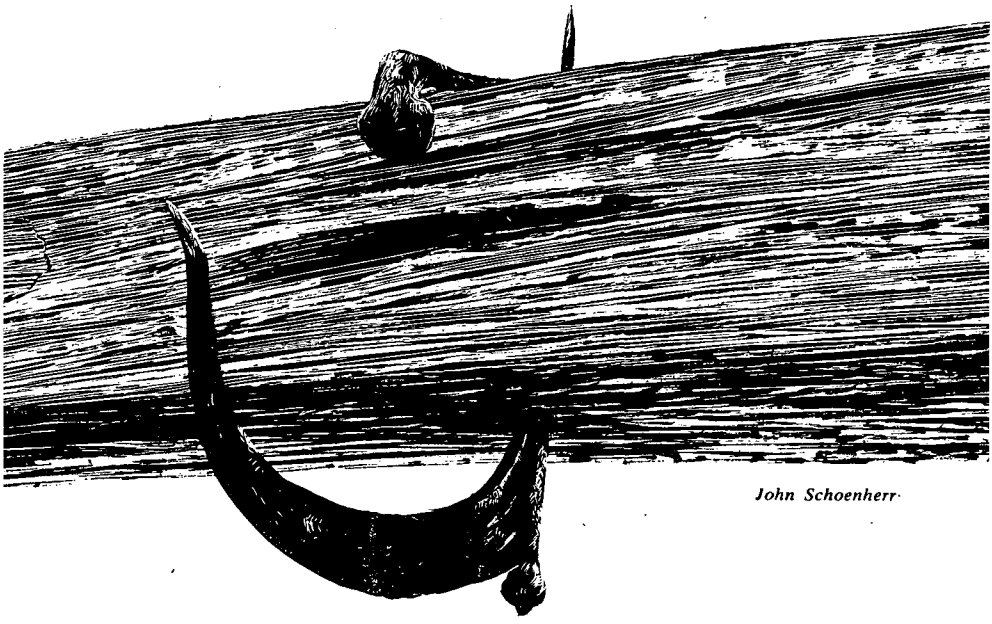

John Schoenherr

Overproof

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The photographs were shocking—and more than shocking.

To any average human mind, they were nauseating, vile, disgusting, and obscene.

"They make my stomach turn to look at them!" Mrs. Dennis Barlow had said when she had handed the envelope to Dr. Paul Hiroa.

Dr. Hiroa had taken the envelope and slid out the pictures. He was well past the sesquicentennial mark, which made him an "old" man, even by the best of geriatric standards, and he had seen and done many things that probably would have shocked Mrs. Dennis Barlow, so his reaction to the photographs was quite mild by comparison. Nonetheless, he had to admit to himself that they were not the sort of thing one would hang in one's living room.

There were eleven of them, no two alike, and yet all of a pattern. They were ordinary color photographs, taken with a fine-detail lens and printed on nine-by-twelve sheets. They were flats, which made them all the more horrible, since tri-di prints tended to make the subjects of a picture look like little dolls, removing much of the sense of reality that a photograph should evoke.

Dr. Hiroa paused at the fifth picture, knowing that the eyes of both Mrs. Dennis Barlow and her husband were fixed firmly on him.

It was the husband, Dr. Barlow, who spoke. "That's the one that hit me, too, Dr. Hiroa. The rest of them I could take, but a girl like that . . ."

"And that horrible monster!" Mrs. Barlow chimed in.

The "horrible monster" was bad enough to the untutored eye, Dr. Hiroa had to admit. The body was vaguely feline in shape, with legs that might have been a blend of panther and frog. The head might have been part tiger, part shark—although there were only four sharp, tearing teeth; the rest were grinding molars, showing that the creature was omnivorous. The eyes were large, saucerlike, and heavy-lidded.

Instead of shoulders, the thing had a collarlike structure that sprouted eight thick, muscular tentacles.

But that was not the real horror.

The real horror lay in what the tentacles were doing.

The female was hanging by her ankles, which were tied together, from a hook on an overhead beam. She was naked.

In fact, she was far too naked to arouse any emotion other than shock in any sane human male.

She had no skin, and the instruments in the tentacles were flaying knives.

Dr. Hiroa said nothing, but went on to look at the remaining photographs. Like the first five, they were similar scenes in some grim abattoir.

When he had finished, Dr. Hiroa

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put the photographs flat on his desk, face up, and looked first at Dr. Dennis Barlow and then at his wife, Blanche. Barlow was thirty-eight and rugged-faced—not exactly handsome, but certainly masculine enough to be attractive to most women. Blanche Barlow was six years younger, with gold-blond hair, a magnificent figure, and a strikingly beautiful face. She might easily have passed for twenty-four.

Before he could say anything, the woman spoke. "Were you aware that this sort of thing is going on here on Sandaroth? Had you been informed that this slaughter of human beings was taking place, Dr. Hiroa?"

Dr. Hiroa frowned. "If there has been any killing of human beings by the Darotha, I am certainly not aware of it," he said carefully. "Certainly no deaths of that kind have been reported. There are only some three-quarters of a million human beings on the whole planet, and wholesale slaughter of human beings would certainly have come to light long before now."

"Are you implying that those photographs have been . . . er . . . manufactured? Falsified?" she asked.

Hiroa kept an incipient smile from breaking forth on his lips. He knew that the Barlows had not come two hundred light-years on their investigation simply on the strength of photographs that might have been faked. The woman was trying to see if senile, stupid, feeble old Doc Hiroa would think he could lie his way out of a jam.

Instead of smiling, he raised an eyebrow. "Falsified? Why, no, Mrs. Barlow. Why should they be?"

"You just said that you knew of no such slaughter going on," she pointed out dryly.

All right, madam, he thought to himself, *if you wish to play games, I'll go along with you.* He had been playing such games more than a century longer than she had.

He gestured toward the photographs. "You mean *that* slaughter? I said no such thing, madam. No such thing."

"You said that if any slaughter of human beings by the monstrous Darotha was taking place, it would have come to light long before now." Her blue eyes were angry.

"I believe you have misquoted me, madam," he said with just the right amount of stiffness in his voice. "I am quite certain that I never called the Darotha monstrous." Then his brown-black eyes bored steadily into hers. "And what has that to do with these photographs?"

Her eyes remained angry, and a whiteness appeared at the corners of her mouth. "I see," she said tightly. "You are denying human status to the natives of Sandaroth, then."

"To most of them, yes," Hiroa said. "There is a smallish insectoid

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creature with all the bad habits of a mosquito which I would particularly claim to be inhuman."

"Dr. Hiroa!" she exploded suddenly, "don't bandy words with me! You know perfectly good and well what I mean!"

"Blanche—" her husband began.

But Hiroa interrupted him. "No, madam, I do *not* know what you mean! Natives? *What* natives? Very well, I won't bandy words with you any more, if you will stop throwing around undefined terms like 'natives'!"

"I won't be—"

"Blanche, shut up."

Dr. Dennis Barlow didn't speak loudly, but there was firmness and authority in his voice. His wife threw him an angry glance, but she shut up. Dennis Barlow wasn't looking at her, but at Dr. Hiroa.

"Dr. Hiroa, my wife and I have carefully studied the reports concerning the major life forms on this planet. Is it not true that the amphibious, tentacled Darotha have not only enslaved the native humanoids but butcher them and eat them?"

"Butcher and eat them, yes," Dr. Hiroa said calmly. "But enslave them? Hardly. It takes a certain amount of intelligence and a certain amount of tractability to become a slave. You might, by stretching the meaning a little, say that our ancestors enslaved the horse. But never the Bengal tiger or the wolf."

Barlow said: "You are not an anthropologist, Dr. Hiroa?" It was only phrased as a question, not meant as one.

"No," Hiroa said. "My field is political sociology. I'm here to make sure that the colony of *Homo sapiens terrestrialis* doesn't go hog-wild socially, as happened on Vangomar."

"Nor a biologist, either?" Barlow persisted.

"Nor a biologist, either," Hiroa agreed tiredly.

"Hm-m-m. According to the reports, you do not regard the native humanoids as being anything more than animals. The Darlington Foundation does not feel that you or anyone else here on Sandaroth is qualified to make such a judgment. I am a biologist—to be more specific, a zoologist. My wife is an anthropologist. We are both qualified and, if I may say so, well-known and respected in our fields. As you are in yours, of course. The Foundation has sent us here to check scientifically on the plight of the species which we have tentatively named *Homo sapiens sandarothorum*. We had thought to ask your aid, but apparently you, too, are convinced that they are just animals."

"My dear Dr. Barlow," Hiroa said evenly, "I will be perfectly happy to give you whatever aid you desire. Your papers are in order, your commission is explicit. To imply that I would fail to aid you sim-

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ply because I disagree with your personal bias is to do me an injustice which borders on personal insult."

"I have no bias one way or the other," Barlow snapped. "Nor has my wife. We are here merely to see that justice is done."

"Exactly," his wife agreed. "No personal insult was intended at all, Dr. Hiroa. By the way, may I ask you a question?"

A personal question, of course, Hiroa thought. *That's the only kind that is prefaced by such a remark.* "I am never offended by an honest question," he said aloud, "unless you are offended by a truthful answer."

She ignored that. "You are a New Zealander, I believe, of Maori descent?"

"I am."

"Then I should think that you would have more compassion for the native humans, considering how your own ancestors were treated by the British in the Eighteenth and Nineteenth Centuries."

"In the first place, Mrs. Barlow, my ancestors were never enslaved nor eaten by the British—though I do not deny the possibility that an ancestor or two of mine mightn't have enjoyed English long pig once in a while. In the second place, we won our right to recognition as human beings with human rights by our own ability to learn new ways and by our ability and valor in war. We forced recognition on the British; it was not handed to us on a silver platter by do-gooders. And in the third place, the Maori were human in the first place, if you'll pardon my use of an old wheeze to make a definite, valid point."

Blanche Barlow's lips tightened again, but she said nothing.

"Now," Dr. Hiroa went on, "I see no reason to continue with these arguments. They prove nothing one way or another. Instead of either of us arguing from personal feelings, we should be arguing from scientific facts. You two are here to uncover those facts. Rather than quarrel, let us set up your program. Let us discuss ways and means. Let us establish your needs to carry on this work."

It took him another ten minutes of diplomacy to get the scowls off their faces and replace them with friendly smiles, but he managed it. It took another two hours to make arrangements for the studies they wanted to conduct, but it was accomplished with only the slightest friction.

"He's not such a bad old boy," Dennis Barlow said as he and his wife walked down the hall from Dr. Hiroa's office.

"He is a bigot," Blanche said firmly. "But," she conceded, "I have met many bigots, and some of them are perfectly likable and rational except in the field of their bigotry."

At the door of the elevator, Barlow tapped the "down" button. No gravshafts here; old-fashioned

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electrics were as yet the best that Sandaroth could offer. The three-quarters of a million Earth colonists had only been on the planet for twenty-five years, although a small group of scientists had been on the planet for nearly thirty-five years before the colonists came. Building a viable colony on an alien planet takes time, money, and effort, and necessities rather than luxuries, basics rather than elaborations, are the primary considerations.

Dennis and Blanche Barlow waited patiently as the indicator crept up toward the figure "6".

When the door slid open and a tentacled horror stepped out, Blanche gave one little scream and fainted. Her husband barely had the presence of mind to grab her and huddle against the wall with her in his arms as the Daroth strode on by with pantherlike steps.

Dr. Hiroa looked up as the knob on his office door turned twice with forceful clatter and then was still.

"Come in and be welcome," he called, knowing that whoever was on the other side was a Daroth. Tentacles, being boneless, are not well adapted for door-knocking, so the Darotha, recognizing the Terrestrial desire for privacy which they themselves did not possess to any marked degree, had adopted their own convention for announcing their presence.

The knob turned again, and the being came in. "'Ello, Dr. 'Iroa. I accept your 'ospitality." It was difficult for a Daroth to form a soft aspirate; it tended to come out gargled, like the *ch* in the German *ach*. Some Darotha pronounced it that way; others simply dropped it. It was a matter of taste on the part of the individual.

"Hello, Ghundruth! What brings you here? I thought you were going to be staying at Great Shoals for another hundred-days."

"Some things came up, Doctor," Ghundruth said, making little circles with the tips of his foremost pair of tentacles. "I thought it best to discuss them with you. But first, I wish you to convey my apologies to your new people."

"Oh," said Hiroa. "You've met the Barlows."

"In the 'all, yes. Just as I came from the elevator. Since they were obviously shocked and frightened, I affected not to notice them."

"I shall convey your apologies," Hiroa said. "although, of course, such apologies are not at all necessary. It is an automatic reaction of those who are not prepared to meet a Daroth."

"Of course." Ghundruth agreed. "So our people react who 'ave never seen one of you before nor been informed of your existence. 'Ad these people, then, not been informed?"

"Not completely," Hiroa said. The statement, he reflected, was true as far as it went. "Their infor-

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mation was meagre and unsatisfactory. My apologies to *you* for that oversight."

"It is as nothing," Ghundruth said, twirling a tentacle-tip. He kept the tips folded, as most Darotha habitually did when they were not being used for delicate work, mak- the tentacles look like those of an octopus. But, when the work at hand demanded it, each tentacle-tip opened out like a flower, splitting into five tentacular "fingers"—or, more accurately, "thumbs", since each was opposable to every other one. "But that brings a question to mind. I 'ave deduced that there must be a savage life form on your 'ome world w'ich resembles us in many respects. I am curious as to w'ether my deduction is correct."

"It is," Hiroa said carefully. He did not want to lie to Ghundruth. "It is purely an aquatic creature, rather than amphibious as you people are, but it has eight tentacles and is generally dreaded by our people. It is carnivorous, of course." He hesitated, then added: "It is called an octopus."

Ghundruth's shark-tiger mouth curled into a grin, and a gurgling chuckle came from deep in his throat. "So *that* is w'y you call us 'Octopussies'!"

"Partly," Hiroa agreed. *Tread carefully now*! "But the word is a . . . what we call a 'portmanteau word' . . . that is, a word made up by blending two words. The other word is 'pussy,' which refers to a small, furry, warm-blooded creature with which some of our people live in a semi-symbiotic relationship."

Ghundruth looked interested. "Indeed? And w'at is the . . . the —mechanism?—trade arrangement?—I do not feel I 'ave the right words."

"The mutual agreement," Hiroa said.

"Yes. W'at does each provide the other, if I do not offend by asking."

"Not at all. A man provides tenderness, security, shelter, and nourishment, while the pussy provides companionship, emotional warmth, and friendship. They are not, you must understand, of high intellectual capacity; their companionship is of a purely emotional character."

"Ah! I see. I thank you for your confidence." Then the tips of each of his two foretentacles split into five finger-length sections and he entwined them in the manner of a man folding his hands over his chest. It was a gesture signifying: "We have exchanged pleasantries; now I wish to speak of important business."

Hiroa lifted his hands and folded them at chest level in reply, indicating that business-talk was agreeably in order. Inwardly, he felt a sense of relief. The Darotha had very little sense of physical privacy, but their sense of mental privacy was strong. It was not that they were not curious; their sense of curios-

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ity was highly developed. But their culture forbade permitting that curiosity to invade the personal life of another. A Daroth could, would, and did pry into everything the physical world had to offer. Almost any intelligent adult Daroth could take a device which he had never seen before—a mechanical wristwatch, for example—and disassemble it after a few minutes of study, then put it back together in working order. And if such a device was left around untended, a Daroth would proceed to take it apart and study it without asking permission, unless it was actually in use at the time.

Hiroa himself had once watched in faint awe while a Daroth had opened the first safe ever to arrive on Sandaroth, many years ago. It was of old-fashioned design; the newer, personally-attuned, saturated-field devices were too expensive for the economy of Sandaroth's human colony, besides being unnecessary. (The rigid psychological requirements for Sandaroth colonists had kept out those whose mental makeup inclined them away from honest labor and toward felony. The Darotha were the first intelligent extraterrestrial race that Man had met, and Hiroa had insisted that Sandaroth be colonized by civilized men, not barbarians.) The safe had not been particularly designed to be burglar-proof; it was designed as a fireproof cache for records. Concrete and steel were still expensive, and most buildings were built of native woods.

Physically, the safe had been a three-foot cube with a door in one side and a simple combination lock set in the door. It was Hiroa's own, and still stood in his office, although the old wooden building had long since been replaced by the present ferroconcrete structure. But twenty years ago, Hiroa had felt that the safe was necessary.

The day after it had arrived, imported at great expense from Earth, a Daroth had come to see Hiroa, and the sociologist had been talking on the phone—still non-vision in those days. He had indicated that the being should wait and went on with his conversation.

The Daroth sat down to wait. (There had been no separate waiting room then, either.) His eyes wandered around the room. He watched Miss Deller, Hiroa's secretary and chief assistant, working assiduously at an electrotyper for a few minutes. Then, having absorbed all the information he could from watching the machine being operated, he turned his eyes to the safe beside her desk.

He looked at it for a long time, apparently fascinated. Miss Deller took a sheet from her typer and left the room. The Daroth rose and walked over to look at the electrotyper and saw that it was still on. "In use," then. Very well. He looked back at the safe. He knelt down to inspect it more closely.

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Then he looked up at Hiroa to see if he was being observed. Good! He was! He reached out a tentacle-tip and touched the steel structure, his eyes still on Hiroa. Hiroa watched, but went on talking.

The Daroth splayed out his five small tentacles, still watching Hiroa, and rippled them across the top of the safe. No reaction from Hiroa. The Daroth solemnly and slowly closed his eyes and then opened them again. It was the equivalent of a silent nod of thanks from a human being.

"Yes. Certainly, Charlie," Hiroa had said into the phone. "Yes. Bye." But when the click came from the other end, he did not cradle the phone. "Oh. Well, maybe," he said, not knowing how much English the Daroth understood. He wanted to see what the being was up to. He was glad he had so decided.

The Daroth touched and looked: Top, bottom, sides, and back. Then back to the safe door, where he felt around the fine crack between the body of the safe and the door itself. He tried the opening handle. Nothing happened. Then he touched the dial—very cautiously. He looked closely at the markings. He turned it slowly, first one way, then the other. He had one tentacle on the handle, one on the knob of the dial, and another near the dial, its sensitive fingerlets touching the rim where the numbers were engraved. The other five tentacles were touching the safe at various other places, sensitive fingerlets attuned to whatever information they might bring. He looked, Hiroa thought, like a starfish opening an oyster, but instead of steady pressure he was using far more potent forces: observation and intelligence.

Hiroa went on making comments into the dead phone. "No, Charlie." "Sure." "If you think so."

Miss Deller returned and stopped just inside the door. She looked at the Daroth and then at Hiroa. Then, understanding and accepting the situation immediately, she went over to her desk and sat down as though nothing unusual at all were going on.

Hiroa had been glancing occasionally at the wall chronometer. When the Daroth finally pulled down on the handle and the safe door swung open, Hiroa looked quickly at the chronometer.

From the time he had started to turn the dial until the opening of the door, something over seventeen minutes had elapsed. In that time, the Daroth had ascertained that the structure was a container, that the handle opened it, and that the dial had to be manipulated in a certain way to release the mechanism that held the door shut. The sensitivity of his fingerlike end-tentacles had done the rest, telling him each time a tumbler fell.

It had been partly luck, of course, but the thinking required had far outweighed the luck.

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The Daroth ignored the papers in the safe. He was inspecting the toggle-bolts and the sockets they slid into. Hiroa said: "Fine, Charlie. Good-by." And hung up.

The Daroth looked up quickly, then rose to his feet. Without looking at the safe, he closed the door, spun the dial, and tested the handle while he said: "Thanks for chance to self-instruct."

"You are welcome. You wished to speak to me."

"Iess. Iess. Ioo are the *Ch*iroa?" The guttural aspirate was strong.

"Yes."

"I are . . . be? . . . is? . . . Ghundruth. I are. . . . *am*! . . . I am *ch*erder of fish. I am told to speak to the *Ch*iroa."

In the twenty years that had passed since then, Ghundruth had lost most of his accent, but his basic personality had remained. Questions about mechanisms; about chemistry, electronics, and physics; about astronomy; about anything the physical world had to offer;—such questions were asked without hesitation. But never personal questions. And, like his fellow Darotha, he considered a question "personal" if it had anything to do with societal relationships; with emotional reactions; with the Earthmen's government, politics, aspirations, desires, intentions, methodology, or purpose; with anything, in fact, that might conceivably be considered subjective, instinctive, or cultural. If information of that sort was volunteered, it was listened to with care —but it was never, *never* asked for.

Hiroa felt it was a measure of the relationship he had with Ghundruth that that reservation had, to some extent, broken down between them in the past few years. Not often, and not without deep apologies, but occasionally, Ghundruth would ask such a question. Even then, his questions were never what the average Earthman would really call "personal."

On the other hand, the questions he had just asked *were*, in a way, personal. There were certain reactions and thought patterns of some human beings that Hiroa did not, as yet, want to reveal to the Darotha. He did not yet want them to know that the seven hundred and fifty thousand human colonists on Sandaroth were a carefully selected group, unlike the average stay-at-home Earthman, and even more unlike the average antisocial malcontent whose numbers formed the bulk of the colonists to the other Earthlike planets, where no alien intelligence had been found.

The Darotha, who were occasionally confronted with the emotional reaction of a few of the new colonists, were inclined to accept it as a non-personal reaction. The situation, they assumed, was analogous to their own reaction when Earthmen had first been seen among them. The Darotha had, individually and collectively, reacted with

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both fear and loathing when they first saw a human being.

Just so would a group of human beings have reacted if suddenly confronted by a rabid wolf. How long would it take a human being to recognize that, regardless of *appearance,* what at first appeared to be a wolf was, judging by his *behavior*, a rational being? On the average, Hiroa knew, it would take longer than it had taken the Darotha to see that human beings were not Ia*ch*us.

The word "Ia*ch*u" was of English derivation. The preliminary scientific expedition which had first seen the humanoid natives of Sandaroth had immediately dubbed them "Yahoos", thus giving Jonathan Swift another score to rank alongside his prediction of the two moons of Mars. After seeing them, the scientists had felt that the reaction of the Darotha upon seeing an Earthman for the first time was understandable and even justifiable. It was to the credit of the Darotha that they had seen and recognized the differences as well as the similarities between the two races which had been spawned separately on two planets so widely separated in space.

The Darotha were shrewd observers of behavior; they spent the first ten years of their lives as gill-equipped fishlike forms, rather like a small porpoise with tentacles, and one must learn to judge behavior in the sea. Long ago, skin divers in Earthly seas had learned to judge whether a given shark was dangerous or not by watching his behavior. Those who did not had a higher mortality rate than those who did. With the Darotha, that process had been going for millennia, and each individual Daroth had spent more time in the sea by his tenth birthday than a dozen Terrestrial skindivers had spent collectively in their entire lives.

The environment of the sea differs qualitatively from the environment of the land. Only the very surface of the sea is troubled by weather; a few fathoms down, the sea is a womb, as far as the nonliving environment is concerned. Hail, frost, snow, blistering heat, dehydration, and even the pull of gravity—all negligible or nonexistent. Even earthquakes and vulcanism, while not unknown, do not take the toll of life that they do on the surface. The dangers faced by marine life are those threatened by other life forms in the sea. On land, death by misadventure is far more prevalent than death by assassination with intent to ingest. In the sea, the reverse is true.

An intelligent marine life form, therefore, learns a different set of lessons than an intelligent land form. An amphibious form, such as the Darotha, has the advantage of learning both.

Little wonder, then, that Ghundruth had deduced the existence of a Terrestrial species resembling the

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Darotha. Why else would an Earthman be startled, frightened by the sight of a Daroth?

Why? thought Hiroa. Simply that human beings used their imagination differently than Darotha did. The Darotha, exposed to dangers on both land and sea, exposed to the voraciousness of marine life and the inanimate, mindless, but nonetheless powerful and deadly natural forces on land, had to use their imaginations to deal with *real* possible dangers. Hiroa was not yet sure whether it was a genetic or a cultural trait—though he hoped it was the latter—but the fact remained that the Darotha were not much given to imaginative fiction—certainly not to the extent that Earthmen were.

Thus, Hiroa would have found it difficult to explain the Barlows' reaction if he had had to admit that, except for the tentacles, a Daroth did not resemble an octopus at all closely, and that the "pussy" part of the tag men had given Darotha was influenced by the end of the word "octopus", and referred, not to the common house cat, but to a resemblance to the greater feline carnivores.

So when he folded his hands to indicate that he was willing to speak of business with Ghundruth, he was happy that the Daroth had not inquired further into "personal" matters. He waited for Ghundruth to speak.

"Dr. 'Iroa," Ghundruth said, "a tragedy is 'appening on the Great Shoals. We do not know 'ow to deal with it."

"What sort of tragedy?" Hiroa asked, narrowing his eyes.

"Our last group of young are—going mad."

[illegible]e Barlow rubbed her eyes wearily. "Dennis, if I have to sit through another tape I'll either go blind or crazy. I haven't made up my mind which."

Dr. Dennis Barlow chuckled. "I agree, honey, but we're getting a lot of the data we need." He riffled through a notebook which by now comprised over a hundred pages. "Getting this stuff correlated is going to be our big job."

He reached over to the playback and took out the spool of TV tape. "The next one is—"

"Please, Dennis! No more today! If I see another tape of those pitiful people living like animals . . . I . . . I'll cry. How can they *allow* it?"

Without comment, Barlow touched the cutoff switch, and the glow in the big, two-meter square TV screen they had been watching faded to a dead silver-gray.

"How *can* they *allow* it?" she repeated, her large blue eyes suddenly focused directly on her husband's face.

His wife's question was still rhetorical, Barlow knew, but he also knew she wanted some kind of answer.

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"Don't get upset, honey," he said gently. "They've been living like that for tens of thousands of years now, I imagine. Another few months—" He was going to say: *won't hurt anything,* but, seeing the expression that was coming over her face, he rapidly shifted gears, and with hardly a pause finished: "—and we'll be able to change all that."

Before she could say anything, the door of the viewing room opened and a tall, broad-shouldered, dark-haired man with a pronounced widow's peak came in. Then he stopped.

"Oh, I'm sorry," he said. "I didn't realize the screen was in use." He spoke with a British accent that had been modified by years away from England.

"That's perfectly all right, Dr. Pendray," Dennis Barlow said with a smile. "We'd just finished."

Blanche Barlow, too, had allowed her incipient frown to be dissipated by a smile. "Yes, we're through for today, Doctor. Come right on in. Actually, we've taken up rather more time than we should have, I suppose."

"Not at all," Pendray said. "I'm really in no hurry. No urgency about it at all. Just wanted to look at a couple of dissection tapes. The nervous system of the Darotha tentacular complex is quite interesting. If you'd care to watch—" He left the sentence floating as an invitation.

"No, I don't think so; thank you," Blanche Barlow said. Then: "Tell me: how did you get Darotha bodies for dissection?"

The surgeon smiled. "You might say they were willed to us. The Darotha practice sea burial, but they're not dogmatic about it. They have no objections to our studies."

"Natural deaths, then?"

"Or accidental," Dr. Pendray said.

"Have you made dissections of the bodies of any of the humanoids?" the woman asked.

"Oh, yes. Several. I can show you the tapes on them, if you like. I see the ones you've been studying are those taken of them in their native habitat. Very good, aren't they? Some of them go back over fifty years. Hidden cameras, all automatic."

"How do you get the humanoid bodies you dissect? Are they willed to you, too?" Her voice was persistent.

Pendray chuckled. "Well, hardly. Most of them come from the Darotha at round-up time. A few have been shot. And several died in captivity. They don't last long in captivity, you know, so we don't capture them any more. Cruel, I think, to cage any wild beast that way when it simply pines away and dies. And the Yahoos won't breed in captivity, either." He paused, looking at her. "What's the matter, Mrs. Barlow?"

"*Yahoos.*" Her voice was bitter.

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"All you have to do is put a degrading tag on someone, eh, Dr. Pendray? Call him 'nigger', or 'chink', or 'gook'; any nasty label that will take away his dignity! Call him a wild beast, an animal! Then it's all right to shoot him or butcher him or imprison him, isn't it, Dr. Pendray? No, thank you, Dr. Pendray; I do not believe I would like to look at your dissection tapes. Take me out of here, Dennis."

She turned angrily and strode toward the door, with Dennis Barlow following. She did not quite reach the door.

"Mrs. Barlow!"

She stopped, turned slightly, and looked over her shoulder at Pendray. "Yes?"

"You have seen the tapes of the Yahoos in their native habitat, behaving in their accustomed manner?" His voice was calm on the surface, but there were crackling undercurrents.

"Yes."

"Mrs. Barlow, one cannot take from an organism that which it does not possess. One cannot take dignity from a Yahoo. One cannot even *give* dignity to a Yahoo. If you had learned anything from those tapes, you should have learned that. It would probably be a waste of your time, indeed, to study the dissection tapes, for you would likely learn nothing from *them,* either. Good day, Mrs. Barlow."

Dr. Dennis Barlow's face clouded, but before he could frame any answer, Blanche pulled his arm, and the two of them stalked out without another word.

Dr. Marcus Landau was in the tape stacks, replacing two spools which he had been viewing, when the Barlows came in. He saw them before they saw him.

Uh-oh! he thought to himself. *The Golden Fury is about to launch a billion-volt lightning bolt that will scorch the area for miles around, if that corona effect means anything. I wonder who or what turned her generator on?*

Dr. Landau was a middle-aged man in his early eighties. He had skin the color of burnished bittersweet chocolate, hair like tiny curls of fine, frosted silver wire, and a mellow voice that carried the soft accents of Bermuda. Along with Dr. Paul Hiroa and Dr. James Pendray, he was one of the three ranking scientists of Sandaroth. After observing Blanche Barlow for the first week of her stay, he had tentatively named her "The Golden Fury"; now, at the end of the second week, there was nothing tentative about it. He also had named Paul Hiroa "Old Rawhide" and Jim Pendray "Silk"—but only to himself, and only because it amused him to play mental games with himself. This game he called "Character Tag" and it had strict rules. No one got a tag until Dr. Landau was morally certain that all of the people who knew that person

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would instantly recognize the tag as fitting and accurate. Like Aristotle, however, he was satisfied with the results of his own cerebration; he never put them to experimental test.

He had not yet made up his mind about Dennis Barlow.

"Blanche," Barlow said in a low, tight voice, "that was uncalled for. You—" Suddenly he stopped and his voice became more normal. "Oh, hello, Dr. Landau."

Aha! Observed! And by a zoologist! "How do you do, Dr. Barlow, Mrs. Barlow," Landau said aloud. "How are your researches coming along? I trust our modest Research Center has supplied you with at least a modicum of pertinent data, eh?"

Evidently the thunderbolt had not been forged for Marcus Landau. She not only didn't unleash it, she put it aside—probably, he decided, for later use. But the coronal discharge that had seemed to crackle soundlessly around her head subsided and vanished.

"Oh, more than that, Dr. Landau," she said with a smile. "There is a fantastic amount of data here. Correlation and interpretation will be the difficult part, I'm afraid. By the way, when do you expect Dr. Hiroa to return from Great Shoals?"

"Why, I don't know. Neither, I'm afraid, does he. I spoke to him over the phone this morning, and he doesn't know how much longer his work will take. Again he asked me to convey his apologies for his precipitate departure so soon after your own arrival. If there is anything you may need or require, of course, you have but to ask."

"Thank you. We will be wanting to make field trips eventually, of course, but it will be some time before we can definitely map out precisely what our plans will be."

Landau bowed his silvery head just a few degrees. "Naturally. Is there anything I can do for you at the moment?"

The Barlows looked at each other. It was Dennis who spoke. "Not just at the moment, Dr. Landau; thanks. Everything's going smoothly so far."

"I am happy to hear it. I wish you every success in your search for truth."

He left them and headed for No. 2 viewing room. Dr. Pendray had not yet turned on the screen. "Busy, Jim?" Landau asked.

"Nothing urgent, Marc. Why?"

Landau came in and closed the door behind him. "I was just wondering what you'd said to our emissaries from the Darlington Foundation that aroused their wrath," he said with a grin. "Especially hers."

"Oh, that." Pendray repeated the conversation.

"Diplomacy, thy name is Pendray," Landau murmured when he had finished.

"It won't matter a damn any-

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way," Pendray said with a shrug. "I have a feeling that she's already mentally writing her final report, complete with conclusions. In the back of her mind, she has already decided what she is going to tell the Foundation. Nothing you or I or anyone else could say will change it, and that husband of hers will go right along with her."

"You have no great faith in them as scientific investigators, eh, Jim?"

"Are you kidding? I've seen their kind before. They will gather vast reams of data, make all kinds of carefully tailored experiments, and prepare dozens of pretty little graphs and tables. They will discard the 'anomalies', of course—any data that doesn't fit in with their preconceived notion. What's left will be neatly pushed and trimmed until it *does* fit. What does Paul think?"

"The same. What can we do about it? The Darlington Foundation will have the report they want. With that and those photographs, the stink they'll raise on Earth will be enough to wreck the whole Sandaroth project, ruining human and Daroth alike."

"One almost wishes," Pendray said, "that the Barlows fail to return from their projected field trip —except that that wouldn't do a bit of good."

"No. The stink that would arise would have a different aroma, but the results would be the same. It's not bad enough that we have this mysterious madness in the last group of Darotha adolescents; we have to have madness of our own race." He put his hand to his forehead and massaged his brows with thumb and middle finger.

"Who's behind it?" Pendray asked. "Do you have any further information?"

"Only what we guessed before. The only man who could have taken those pictures was Finnerly of Industrial Computer Corporation," Landau said. "But they're not the only ones."

"Who else? I thought you said you didn't have any more information."

"I don't. But think about it. ICC isn't trying to get troops sent here to 'protect' the Yahoos just so they can wind up selling us computers and guidance-and-control systems for a few multiphase lathes and shapers."

"You're right." There was anger in Pendray's voice. "Without the Darotha, this planet would be just like any other. Wide open. We'd have fifty million people here within five years. No control."

"No control," Landau agreed. "But plenty of new sales territory for certain unscrupulous lice. We know who *isn't* in on it, too. None of the Big Three in inertiogravitics; they're strictly honest and strictly ethical. The same goes for most of the big, important corporations. You can bet ICC isn't getting any backing from those boys. But there

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are others. Too many of them."

"It'll be a double play, then," Pendray said. "They'll hit us high and low. Protect the Noble Yahoos on the one hand and open Sandaroth up for full colonization on the other."

"The sound of two hands clapping," Landau said dryly.

"Yeah. While the only extraterrestrial intelligent race we have met gets crushed between them. We might as well pack up and go home."

"You don't have much faith in Paul's plan, then?"

"Frankly, Marc, no." Pendray admitted. "He seems to think that giving the Barlows all the data they can swallow will convince them. But, dammit, Marc, you can't convince a fanatic he's wrong by giving him data. He only believes what he wants to believe."

" 'My mind is made up; please don't confuse me with facts.' " Landau quoted.

"Exactly."

"But there's nothing else we can do, Jim," Landau said. "We can't fight the Darlington Foundation for the Promotion of Human Brotherhood. I doubt if even the Government could fight it. It's got billions behind it—both in money and in people. And it's full of people like the Barlows: honest, dedicated, hardworking fanatics."

"I know. I know." Pendray rubbed his chin with a fingertip. "What about Governor Donovan? What's he going to do?"

"Paul talked to him. He agreed to stay out of the whole mess. If worse comes to worst, and the planet is opened up, he can stay on as Colonial Governor and try to protect the Darotha as much as possible."

"That may help. But not much." Pendray suddenly twisted his mouth into a sardonic grin. "Maybe I'd have been better off if I hadn't come back from the field until this was all over, one way or another. At least one has other things to worry about out in the boondocks. I'm really not a city boy at heart."

Landau grinned back. "Obviously not, or you wouldn't call Point Garrison a city. We're still a village at heart. Forty thousand people could get lost without anyone noticing it in a real city."

"It contains half the human population of the planet," Pendray said. "No city on Earth can make that statement."

"Agreed. Oh, and Jim—"

"Yes?"

"I think we'll be better off if we don't antagonize the Barlows. It just—"

"Just stiffens their resistance. I know, Marc. I'll try to cultivate the 'friendly physician and counselor' attitude. The Country Doctor bit. But if she gets offended every time she hears the word Yahoo in that context, she's going to feel offended most of the time."

"Well, we can't wrap her in swaddling clothes. I'll let you go

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back to your tapes now. Thanks, Jim."

Very few of the citizens of Point Garrison were aware of the danger embodied in Blanche and Dennis Barlow. Their names had been mentioned in the newscasts when they arrived, but hardly anyone paid any attention. In certain circles, the word spread that they were studying the Yahoo, but that aroused no particular curiosity. Why should it? It was said by those who had met them that the Barlows —and especially Blanche Barlow— were "a little nutty" on the subject of Yahoos and Yahoo intelligence and most of these people learned to substitute the phrase "humanoid natives" for "Yahoos" in their presence. Except for that quirk, they seemed a pleasant enough couple. Women were attracted to the handsome, personable, Dennis, and men found it difficult to keep their eyes off Blanche's beauty. Even so, they were "foreigners"—visitors, not residents. Somehow, they did not fit well into the social life of Point Garrison. If the truth were known, that didn't bother the Barlows; they didn't even notice it. They were on Sandaroth to work, not to socialize.

At the end of the first month, Dennis decided he'd take a tour of one of the small factories in the city: Garrison Flyer Mfg. Co.

The manager of the plant was a short, round, sandy-haired Scot named Fred Doyle. He met Barlow at the front gate and gave him a hearty handshake.

"Glad to know you, Dr. Barlow! Governor Donovan called me. Said you wanted to look around. Glad to have you. Come in, come in."

After a few minutes of polite amenities, Dennis Barlow was asked where he'd like to start.

"Well, to be perfectly frank, Mr. Doyle—"

"Just call me Fred, Dr. Barlow. Everybody does."

"O.K. Fred. And I'm Dennis. At any rate, I was going to say that I had some free time today, so I thought I'd take a kind of busman's holiday. My wife is feeding stuff into the computer at the Research Institute, and it's a job that only takes one. Actually, I'm interested in your factory as a zoologist rather than from the actual manufacturing point of view."

"Well, if you'll tell me why a zoologist should be interested in the manufacture of inertiogravitic motors from a zoological point of view, I'll be glad to help you, Dennis."

"I understand you have some Darotha working for you, Fred, and I understand they can do jobs that no human being can do."

"Oh!" Fred chuckled. "Why, sure! Come along; I'll take you to the multiplex lathe section. That's the most interesting part, anyway. I'll introduce you to my foreman, Than; he'll be able to show you how these things work."

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He led Dennis Barlow to a huge building full of machines. Everything was well-lit, airy, and clean. It seemed more like a kitchen or an operating room than a workshop. It took Barlow a minute or two to realize that, as far as he could see, he and Doyle were the only human beings in the place. All the machines were run by Darotha.

"Than!" Fred called to one of them who was wiping off a big machine with a piece of toweling. "C'mere a minute! I want you to meet a fellow."

The Daroth put the rag down and came toward the two men with panther-like grace. "Ow are you this morning, Fred?" His voice carried easily over the low, all-pervading hum of power that was the only noticeable noise in the place.

"Pretty good, Than; pretty good. I'd like you to meet Dr. Dennis Barlow. Dr. Barlow, this is Thannovosh, my general foreman for this section."

"Glad to know you, Dr. Barlow." Then he looked expectantly at Fred.

"Have you got one of the machines free, Than? I'd like you to give Dr. Barlow a little demonstration if you've got the time."

"Sure, Fred; glad to. Just come this way over to Number Fourteen, Dr. Barlow."

Barlow followed, but he was looking at the other machines in the building. There were about thirty of them, and at each stood a Daroth, all eight tentacles moving at once, turning various verniers, knobs, and control wheels. There was a weird, rhythmic beauty about it that reminded him of seaweed fronds moving in a slow current or the tentacles of a slowly swimming octopus.

At machine Number Fourteen, Than said: "I've got 'er all set up for a BJF-37, Fred. Will that be all right?"

"Sure. Fine. Show him your check-block, will you, and explain it to him."

From a drawer in the base of the machine, Than took an odd metal shape. It was about the size of a man's fist, but it was surfaced with weirdly undulating curves, complex three-dimensional curves that made queer hills and valleys and swirling grooves.

"This is w'at we call the check-block, Dr. Barlow. It's the same size and shape as the impulse spinner in an inertiogravitic unit. 'Ave you ever looked inside the engine of a flier?"

"Not with the casing off, no."

"Well, the impulse spinner 'as to undergo several different modes of motion at once—depending on w'ether you're moving up or down, right or left, pitching, yawing, rolling, or just 'overing. There are eight of them in an ordinary flier engine. They all move at tremendously 'igh velocities and undergo 'igh surges. And they all 'ave to be

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synchronized. This is made of 'ardened tool steel instead of Paramag alloy, but the shape is the same. Each one of these surfaces is a control surface for the various modes of motion and each performs a different function as the axis of spin is shifted. That's w'at makes it look so odd." Than chuckled. "It 'as a sort of a shapeless shape, you might say. But it 'as to be that way, and each curve 'as to be just so, or you'll get vibration that'll shake your engine apart."

Two tentacles put the block down. Two more indicated the machine-itself. "Now this is w'at we call a multiplex lathe. An impulse spinner can't be cast; it 'as to be forged and machined. You 'ave to be sure it's 'omogeneous and of equal density throughout."

Two more tentacles reached out to a low, wheeled framework nearby and took a lump of metal out of a tray. Than held the lump up for Barlow's inspection. "This is the forged blank. All we 'ave to do is machine it, and this is 'ow it's done."

He fitted the check-block into the multiplex chuck to his left, and the forged blank into the chuck at his right. A guide rod touching the surface of the check-block was exactly matched with a borazon cutting tool that touched the forged blank. As the guide rod followed the curves of the check-block, the tool cut the same curves in the blank. A tentacle touched a switch and both pieces of metal began to spin. Then there was a sudden deadness in the air around the machine, as though someone had thrown a heavy blanket over it. "Got to 'ave the noise suppressors on," Than said, "otherwise this place would be a screaming 'ell."

Than spun two more wheels, and two more borazon tools moved toward the forged blank, each with its corresponding guide rod moving toward the check-block.

Then Than touched another switch and the dance of the tentacles began. There was grace to it that reminded Barlow of the hand motions of a Hawaiian hula dancer. The tentacles moved knobs and levers, and the borazon tools, all three of them at once, bit smoothly into the spinning blank, slicing off ribbons of bright metal. Than touched the chuck control and the axis of spin changed slightly as the borazon chisels sliced away the unwanted metal. Again the axis of spin shifted, and the tools moved in and out over the blank, cutting, cutting.

Barlow watched in fascination as the impulse spinner took shape beneath the cutting edge of the borazon, transfiguring the lumpy-looking forged blank into a piece of precision machinery.

Then, abruptly, it was finished.

The tools fell away and the spinning stopped. Than released the chuck and took the finished piece

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out. "Now we'll take 'er over to the comparator and see 'ow she matches the master block." When he was done, he handed the new-formed impulse spinner to Barlow.

"There she is, Dr. Barlow. Correct to a thousandth of a millimeter. Next, she'll go in a similar machine for final polishing, and she'll be done."

"Beautiful," Barlow said in honest admiration.

"Thank you, sir. Was that all you wanted, Fred?"

"That's all. Thanks a lot, Than. Unless Dr. Barlow has some questions."

"The only question I can think of is: How did you do it? It's all I can do to control two arms and ten fingers. The thought of trying to control eight arms and forty fingers appalls me."

Than's shark-tiger face grinned widely. "Just takes practice, Dr. Barlow. And I'll tell you, I don't see 'ow you people do such delicate work with all those bones inside forcing you to bend only at certain places and in certain directions. I saw a man do a steel engraving by 'and once, and I'll never understand 'ow 'e did it. Putting pressure on a burin takes internal bracing w'ich I 'aven't got. It would be like running this machine with my feet, it seems to me."

Barlow glanced at the Daroth's sandaled feet. There were no toes, properly speaking. Each foot came to a point, reminding Barlow of the mail-shod feet of a medieval knight. At the tip was a single, heavy, curving claw.

"He keeps his feet folded in like that for walking on land," Fred said, noticing Barlow's glance. "Dr. Barlow's never met a Daroth before, Than. Show him how your feet unfold for swimming."

"Sure." With three tentacles, he braced himself lightly against the lathe. Two other tentacles pulled the sandal from his right foot. He lifted his leg up and doubled it at the knee, so that Barlow could see the "sole" of the foot. A crease ran from just forward of the heel to the base of the front claw. "W'en I'm in the water, I open out, like this."

The crease widened and the foot folded out, so that the two halves of what had been the sole were now on the upper side of a wide, splayed foot, making a ridge of callous on each side of the upper part. The new sole thus exposed looked membranous and tender.

"Then you can't walk with your feet unfolded that way?" Barlow asked.

"Oh, I could," Than said, refolding his foot and putting it back in the sandal. "But not for very far before my feet 'urt so bad I couldn't take it. That's on solid land, I mean. Walking through swamps, like the brackish swamps down around the Delta Cape, a fellow can unfold 'is feet for walking across thick mud so 'e doesn't sink

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in. But if the mud is that soft, it doesn't 'urt, you see."

"Very handy," said Barlow. "Or should I say, 'footy'?"

"Ooh!" said Fred, wincing.

Than chuckled. *"Nothing's* 'andy for a Daroth."

"Puns aside," Fred said, "a skilled and trained Daroth comes in handy for running a multiplex lathe. No Earthman could do it. Not even four Earthmen working together could do it. It's been tried. Not only is the co-ordination lousy, but they get in each other's way. Back on Earth, they use a computer that costs more than the lathe and is damn near as massive. We just bought the lathes and then designed and built the controls ourselves. That saved the cost of the computer and the high interstellar freight charges. It also saves the cost of repairs and of re-programming the computer when you set up for a different size or type of impulse spinner. We pay Standard Wages for all our employees, Earther or Daroth, so the labor costs run high, but you have to have a certain amount of labor anyway to set up and break down the check-blocks and tools and for maintenance and so on. Besides, the machines are a lot more flexible this way. To set up a computer to make just one piece would cost the same as setting it up for a full run, while a Daroth can interrupt a run, tear down, set up, run a single piece, tear down and set up again, and be back on the regular run in fifteen minutes at no extra cost.

"But the real beauty of the thing is that all the money that would go for freight charges and computer costs stays right here on Sandaroth where it's needed, instead of being funneled back to Earth."

"I'm very 'appy about w'at goes into *my* pocket," said Than, touching a tentacle to his blue workshorts, the only article of clothing he wore besides the sandals.

Dennis Barlow suddenly realized the change that had come over him in the past twenty minutes or so. He had come in with a sense of horror that had seemed to ride between his shoulder blades. So many Darotha around had brought clearly to mind those terrible photographs. But now he was aware that he thought of Than, not as a tentacled horror, but as a person. Someone you could talk to, laugh with, maybe have a few beers with of an evening. The photos had become dim and lifeless in comparison to the reality which stood before him.

A chime sounded, clearly but not stridently audible over the low hum in the shop.

"Lunchtime," said Fred. "Will you stay and eat with us, Dennis?"

"No, thanks, Fred. Some other time. I appreciate everything, really. I've enjoyed myself tremendously. It was a pleasure meeting you, Than; I hope to see you again sometime."

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"The same 'ere, Dr. Barlow. Come again w'en you can stay longer. We can show you more."

"That's right," Fred said. "Come around again, early, and I'll show you through the whole plant. Lots of things here I think you might be interested in."

"I'll see if I can't work it in, Fred. But right now, I have a lunch date with a beautiful blonde. My wife."

"O.K. I'll walk you to the gate."

"Me for a *lurgh* sandwich and a cold drink," Than said. "See you again, Dr. Barlow." The Daroth loped off across the shop.

As the two men walked across the yard to the gate, Dennis said: "What was that Than said, Fred? A *lurg* sandwich?"

"Lurgh," Fred corrected. "You've got to sort of gargle that *g* sound."

"Lurghh. I see. What is it?"

"Smoked Yahoo meat. Don't care for it myself, but—Why, what's the matter, Dennis? You sick or something?"

Barlow fought down the wave of horror and nausea that had swept over him. "No," he said. "No. I'm O.K. Just the sun, I guess."

"Yeah. Coming out of that air-conditioned shop into this heat can do that sometimes. You sure you're O.K.?"

"Sure. Just a little wave of dizziness is all. It's gone now. I'm fine."

But he ate no lunch that day, and he did not tell Blanche why.

Dr. James Pendray sat at the controls of the little six-passenger flier and secretly wished he knew what the devil was going on in Paul Hiroa's mind. The old boy was up to something, of that Pendray was certain. But just what it was . . .

Well, whatever it was, Pendray was willing to go along with it. That wise old brain had cooked up some sort of plan, and just because it was Hiroa's plan, it was bound to be a sound one.

In the seat behind him, Dennis and Blanche Barlow were talking in low but not secretive tones, pointing out to each other the various interesting configurations of the terrain below. At a groundspeed of a little less than three hundred thirty kilometers per hour and an altitude of one kilometer, their viewpoint was just right for scenery-gazing.

"Is that the shoreline over there to the south, Jim?" Dennis asked from the back seat.

Pendray had been exercising his diplomacy of late, and the three of them were now on a first name basis.

"That's it. You won't be able to see it too well for a couple of hours yet. We're flying parallel to the sea. After that, it's only another hour to Great Shoals."

"And the humanoid territory is just north of there?" Blanche asked.

"That's right. Less than an hour's flight, even if we're unlucky.

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Usually, a tribe can be found within ninety kilometers of Grand Shoals."

"Good. We want to get there as quickly as possible."

Too flaming right she does, Pendray thought. The notion of going to the major city of the Darotha did not appeal to her at all. Pendray wasn't quite sure whether she loathed the Darotha, hated them, or feared them, but he suspected it was a blend of all three in various proportions depending on the circumstances.

"I meant to ask you, Jim," Dennis said, "if you know why the Darotha built their city at Great Shoals. I mean, we humans usually build a city near a river or lake or some other water supply, and on Earth the really big cities were near a shipping port. But the Darotha always stay near the sea, and they don't have much shipping, so why should they concentrate around Great Shoals? Just random chance, or is there a reason for it?"

"Didn't you know?" Pendray was actually surprised. "It's one of their major breeding areas."

"*Breeding* areas?"

"Sure. Great Shoals is an offshore section of the continental shelf that is practically horizontal. There's nearly a hundred thousand square kilometers of the shelf where the maximum depth is only ten fathoms and the average is about five. It's full of little islands and rocks, sticking above the surface. The edge of the shelf is nearly two hundred kilometers offshore, but a man could probably wade all the way out if he picked his route carefully. Mightn't even have to get his hair wet. It's just the opposite of an Earthly seaport. Lousy for ship navigation, but a great place for the kiddies."

"How does their reproduction cycle go, anyway?" Dennis asked.

Pendray wondered how a zoologist could have failed to ask that question long before this. Blanche, the anthropologist, wasn't the least bit interested, of course, but Dennis should have been curious from the first. But Blanche had evidently kept him so wrapped up in the Yahoos that he had no time for excursions into other alien life forms.

"Nothing complicated about it," Pendray said. "The Darotha, like Man, make love at all seasons of the year, and, as in the human female, the Darotha female's fertility periods are cyclic. But the Darotha cycle is annual rather than monthly. The eggs are laid in the sea about six weeks after fertilization and they hatch about three months after that—about midsummer. At the end of the ninth year, the lungs begin to develop and the gills to disappear. By the spring of the tenth year, the young are ready to come ashore and continue life as air breathers. Like humans, they're ready to reproduce by the

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time they're fourteen or fifteen, and the cycle begins all over again."

"Um—what sort of family life do they have?" Blanche asked, interested in spite of herself.

"None, if by 'family' you mean blood relationship. The kids are literally on their own for the first ten years. Nobody knows whose is whose and don't care. The adults keep the big, dangerous predators away, and the females especially will go out and throw food to the little ones. The adults do a great deal of swimming, and they have a great time romping with the kids. The children may not know who their parents are, but they're very much loved. An adult couple will take care of as many of the youngsters as he can afford to, after they have achieved the air-breathing stage."

"If they don't know what the genetic relationships are," Blanche said, "how do they prevent incest?"

"They don't," Pendray told her. "Why should they? The statistical probability that any male and female picked at random will be brother and sister is very low. More often than not, an adult couple who have decided to mate permanently were brought up together in the same household since they were ten. They have no concept of virginity and no bans against premarital experimentation, either. A girl deposits a clutch of eggs every year after her fifteenth birthday; how does she know whether they're fertile or not? And why should she care? The mixing of genetic material is a great deal more random than it is in the human race, believe me."

"Then they have no sexual taboos at all?" Blanche asked.

"Sure they do. No adult would marry anyone more than ten years younger or older. That insures that the generations don't mix. And once a couple decide to marry, they mate for life. Adultery is almost unknown."

"I'm surprised they marry at all," Blanche said with a touch of sarcasm. "I doubt whether animals like that have any real concept of marriage."

Pendray kept his voice level. "Their concept of it isn't the same as ours, of course, but the similarities are surprising. Love, the desire for companionship, the feeling of mutual security, the rearing of a family—those points we have in common. And I doubt that any Daroth couple ever married because she was pregnant or because they had guilt feelings about premarital intercourse. There are some 'forced' marriages, of course. Bachelors and spinsters are frowned upon by society—much more strongly than they are in our own. There are loveless marriages, just as there are quarrels and arguments and lawsuits and so on. They're no more perfect than we are—just different, that's all."

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"Different," Blanche said. "Different. Oh, yes. Yes, we're different, all right. Dennis, look over there, to our left! Isn't that a lovely lake?"

She doesn't like Darotha, Pendray thought. *And the only good Indian is a dead Indian. Only she'd never say that about Indians.*

"Then it is not insanity?" Ghundruth said.

"I'm quite certain it isn't," Dr. Hiroa said. "Not in the sense you mean. These children have just learned something that none of your race has ever been exposed to before. It's our fault, of course. We Earthmen have been doing that sort of thing for as far back as we can trace. It's only in the past eighteen months that any sizable group of Earthmen have lived here in Great Shoals, and only during that time have your adolescent children been exposed to them."

"I'm afraid I do not understand," Ghundruth said. "These hallucinations, these unreal things w'ich they 'ave made in their own minds. That is not insanity?"

"No. The kids don't believe those things they tell are real. Look, Ghundruth; you can tell a lie, can't you?"

"Yes. When necessary; yes. But w'y do they feel it necessary to tell such outrageous lies?"

"That's the point, the whole point. They *don't* find it necessary. They do it for the fun of it; because they enjoy it."

Ghundruth was silent for a long stretch of seconds. Then he burst out: "I don't understand it! 'Ow can they enjoy such a thing? It isn't—it isn't *normal!* That's like enjoying blinking or something. One does it w'en one must, but one doesn't do it for *pleasure.*"

"Do you only eat when you must?"

"No. No."

"And you do enjoy it?"

"Yes. Is there a correlation?"

"Of course. Look at it another way: you use parables and analogies don't you?"

"For instruction. For the purpose of showing an example or for making a generality applicable specifically. Or for showing a similarity or correlation, as you are apparently doing now. But not just for fun. I can't understand that. None of us can."

Hiroa closed his eyes. "Maybe you never will, Ghundruth."

"W'y not? If a child can understand, can't I?" He did not understand; he did not *want* to understand. But he did not like to be told that such understanding might be beyond his capabilities.

"There have been cases, have there not," Hiroa said, "of a Darotha child being lost in a storm during his tenth year and being washed ashore in an uninhabited spot at just the time when the final change is taking place, when his gills have vanished and his lungs are doing all the work?"

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"Yes. Occasionally. Not often. Usually 'e will find 'is way back."

"But sometimes he stays there?"

"There 'ave been cases of it. Usually the child dies very soon afterward. Unin'abited places usually 'ave no food available ashore, w'ich means the child would 'ave to live from the sea. But such cases 'ave 'appened, yes."

"What were they like when they were found?"

"Feebleminded. They could not speak and could not learn to speak. Nor could they learn civilized ways. We 'ave assumed that that was the reason w'y they did not return 'ome—because they were feebleminded."

"No. Just the reverse. Because they did not return home, they seemed feebleminded. There is a critical period for learning speech. If one of our children doesn't learn to speak by the time he is five, he never really learns to at all. With your children, that critical five-year period apparently comes immediately after the change. They don't become symbol users until then. If they're not taught to speak then, they never learn."

"Ahhh," Ghundruth said thoughtfully. "Like swimming."

"Swimming? How's that?"

"Occasionally, a child will 'ave an accident early in 'is tenth year, and 'e must be 'ospitalized. 'Is tail is dissolving and 'is legs are growing. If 'e does not learn to swim with 'is legs during that year, 'e never learns after that. If 'e does not learn to walk during the following year, 'e never learns that."

"Then you can see my point. If I'd known that, I would have used it as my example."

"Is it not the same with you?"

"No. With us, swimming is an art that can be learned at any time, though it is easier to learn it in childhood."

"And w'at 'as this to do with telling lies for fun?"

"Not just with the telling, but with the understanding of *why* they are told for fun. I wonder if it isn't possible that lying for fun is an art that must be learned early or not at all. If it is, then an older Daroth cannot learn it and, therefore, can never understand it. It is my belief that this is true."

"And all Earthmen do this? 'Ow is it that we 'ave never recognized this? 'Ow is it we did not know?"

"You didn't see it because you didn't recognize its existence at all. Ghundruth, both our races have a sense of humor, and in many places they overlap. Puns, for instance. We both enjoy making puns."

"Yes. Because of the theretofore unnoticed cross-correlation between two otherwise unrelated symbols. They are instructive and therefore enjoyable."

Hiroa looked at him. "I'll be damned," he said softly. "I never thought of it that way. Look; you tell jokes, just as we do. We don't

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enjoy all of yours, and you don't enjoy all of ours, but there are some that we share. Why do you tell jokes?"

"They are instructive. A joke is an instructive parable w'ich 'as an unexpected or theretofore unforeseen result. Is it not?"

"I've just realized, after all these years," Hiroa said, "that we laugh at the same things for entirely different reasons. I'd be willing to bet that the jokes of ours that you didn't get were those which were not instructive. Boy!"

"We learn more about each other every moment, eh, my friend? I wonder if we will ever really understand one another? But you were going to make a correlation between jokes and lies-for-the-fun-of-it."

"I was going to point out that jokes *are* lies-for-the-fun-of-it," Hiroa said. "But evidently they are not, to your way of thinking."

"No. No. I do not understand what you mean. What is the *purpose* of these non-instructive parables? They are meaningless nonsense. Explain to me the meaning of the parable of *Silversheen and the Three Yahoos.*"

Paul Hiroa had to hold back a laugh. Whoever had told that one had made a couple of neat switches. A silvery sheen on the skin of a Daroth female was prized in the same way that blondes were among Earthmen. And the "Three Yahoos" was almost perfect.

"It has no instructive meaning," Hiroa said. "It is an adaptation of a very old children's story. Almost every Earthman has heard it as a child. Where did you hear it?"

"One of my girls told it to me. She asked if I 'ad 'eard it, and I told 'er I 'ad not. I saw that she enjoyed telling it, but I saw no reason for it."

"Tell me: did she use different voice-tones for the three Yahoos? Was Papa Yahoo a deep-voiced person and Baby Yahoo high and squeaky?"

"Yes, that was the way of it."

"And the child enjoyed that particularly?"

"Apparently."

"What was your reaction?"

"I was shocked. I knew she 'ad 'eard it from one of your people, and I could not see w'y anyone would deliberately lie to a child for no reason. I still do not. Yahoos cannot speak, and it is a lie to say that they do."

"And did you explain to her that Yahoos don't speak?"

"Yes. And she said: 'Oh, I know that. It's just a story.' And I didn't understand. I still don't."

"Maybe you will eventually. Someday."

"But you do not think so, eh, friend Hiroa?" He smiled.

"I'd hate to bet on it one way or another. But the children understand it, and that's what led to the next step. They made up their own stories. They made up lies and

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thought their guardians would understand. And they didn't. You thought they were insane."

"Yes. And I must say frankly that I am not at all sure you are right in your explanation. Even you, wise as you are, do not know 'ow our minds work, any more than we understand you."

"I admit that." *Two countries separated by a common tongue,* he quoted to himself. "We can only wait and see. I shall ask my people not to tell any more stories of that kind to your children if you wish."

"Per'aps it will be better," Ghundruth said thoughtfully. "It 'as caused much disturbance among the older Darotha. I do not like to see 'ard feelings between my people and yours." He paused. "But to be honest, I think the damage 'as already been done. We could forbid the children to tell the stories to each other, but 'ow could we enforce such a rule? It would not be possible. Therefore we will not, for it is foolish to make rules that cannot be enforced."

"I cannot enforce such a rule, either, but I think my people will see the wisdom in acquiescing to my request." *And they'll get quite a laugh out of the idea that Silversheen and the Three Yahoos is a youth-corrupting story which contributes to the delinquency of minors. But they'll understand even* as *they laugh.*

And Ghun is right, he thought, *the damage has been done.*

"Dr. Hiroa," Blanche Barlow said angrily, "I would like to know why you have instructed a flierload of Darotha to follow us north into humanoid country!"

She had knocked on the door of his room, and when he'd said, "Come in," she had burst through the door and snapped out the question.

"I didn't order it, Mrs. Barlow," he said mildly. "That's the law. Not my law. Darotha law. That's protected territory up there."

"But they're going armed!"

"Of course. That's dangerous country, Mrs. Barlow."

"I don't need protection! My husband and I can take care of ourselves! The humanoids won't hurt us if we show them we come in peace and brotherhood! I won't be followed by armed monsters!"

Hiroa could hear every exclamation point slam into place. "Mrs. Barlow. Listen to me carefully. There is nothing I can do about it. The law cannot be abrogated for me or for you or for anyone else. The game wardens must accompany *anyone* who goes up there. They are not just for your protection; they are there for the protection of the humanoids, too. The game laws must be obeyed."

"*Game* laws!" Her eyes blazed. "So they're just—"

"Mrs. Barlow!" Hiroa had an amazingly powerful voice when he chose to use it. "I do not wish to listen to another of your tirades on

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the rights, privileges, and dignity of the humanoids. The game laws were laid down long before Man ever arrived on this world. The wardens will inform you of those laws before you leave. I suggest you listen and obey. If there is nothing else, Mrs. Barlow, then good day."

"I call it a damn fool, damn dangerous stunt!" Dr. Pendray said in a low, harsh whisper.

"My wife knows what she's doing," Dennis Barlow said in the same tone of voice. "Shut up and let her do it. She knows how to handle primitive savages."

"But not wild animals!"

"Shut up!"

The two men were inside the flier. Barlow had a small TV recording camera focused on his wife, who was some thirty yards away, with her back to them, walking slowly forward through the calf-high grass. Twenty yards in front of her, at the foot of a low, rocky hill, a troop of some twenty-five or thirty Yahoos sat silently and watched her.

They looked human. Even James Pendray had to admit that. They were not very clean, but they weren't really filthy, either. They wore no clothes, no decorations of any kind. Their hair was brown and hung in tangled ringlets, but it was not very long. The males had beards, but they were rather sparse and short. They had rather sloping foreheads and rather heavy jaws, but no more so than many human beings. They watched the girl's approach in unmoving silence.

She walked toward them, hands in front of her, fingers outspread, showing that she carried no weapons.

Pendray was silently thankful that four Darotha game wardens were stationed around the area, hidden but alert.

Five yards in front of the statue-like group, Blanche Barlow stopped. She spoke in a voice so soft that the members of her party couldn't hear it, although it was picked up by the directional microphone that Dennis has focused on her. She was not saying words; she was making sounds—gentle, soothing, friendly sounds. They were intended to convey emotion, not intelligence. Her voice was soft, sweet, and tender.

One of the Yahoos growled.

Blanche went on making gentle noises. The only motion was the wriggling of two babies held in the arms of a big-bosomed female. The rest watched Blanche with cautious eyes.

Then one of the males, a broad-shouldered specimen with a mane of graying hair, began walking towards her. Blanche's voice changed a little, became encouraging. She held out her hand to the male.

He grabbed it, jerked her toward him, and slammed a heavy fist against the side of her head. As if

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at a signal, the rest of the band charged toward her, hands grasping, voices howling and barking.

As Blanche Barlow slumped, there was a ragged chorus of rifle fire. Four high-velocity, heavy-caliber slugs tore into the Yahoos. Two of them slammed into the chest of the male who had struck Blanche. The next two Yahoos got one apiece. More shots crashed through the air.

The Yahoos that remained on their feet spun and fled toward the protection of the rocks. Some picked up stones and began throwing them at Blanche, not knowing where the actual danger had come from, but sniping fire from the four Darotha game wardens kept them from throwing accurately.

Dennis Barlow and James Pendray were already sprinting toward Blanche.

She had only been stunned. She pushed herself to a sitting position and looked groggily around.

"Keep down!" Dennis yelled. *"Keep down, Blanche!"*

She seemed not to hear him. Her eyes were on tragedy. The big-bosomed female was sprawled nearby, a bullet through her brain. Unhurt, but squalling lustily, the two babies sat near her.

Dennis reached Blanche first, with Pendray only steps behind.

"Come on, honey; let's get out of here!" He helped her to her feet. The stone-throwing had stopped. So had the rifle fire.

"I'm all right," she said weakly. "I can walk. Get the babies, Dennis. Get the babies."

"Aren't they beautiful, Dr. Hiroa? Absolutely beautiful?"

"They are cute," Dr. Hiroa admitted. "I've seen much uglier human babies in my time."

"They aren't more than a month old. Look at the way they take to the bottle! Aren't they darling?" Blanche looked fondly at the two infants in the cribs she had bought for them.

She had had to get a special permit from the Darotha authorities to bring the Yahoo babies back to Point Garrison, but Dr. Hiroa, surprisingly enough, had exercised his influence in her favor. Now, bathed and diapered, the little ones looked as human as any other baby in Point Garrison.

"This will prove my point, Dr. Hiroa. Dennis and I are going to bring them up as though they were our own." She turned away from the cribs to face Hiroa. "The poor things have never had a chance, Dr. Hiroa. For thousands of years, they've been hunted and chivvied, driven like wild beasts by the Darotha. They've had no chance to evolve any sort of stable culture. Their language has remained primitive."

"Are you sure they have a language?" Dr. Hiroa asked.

"Certainly! All human societies have a language. It's one of the

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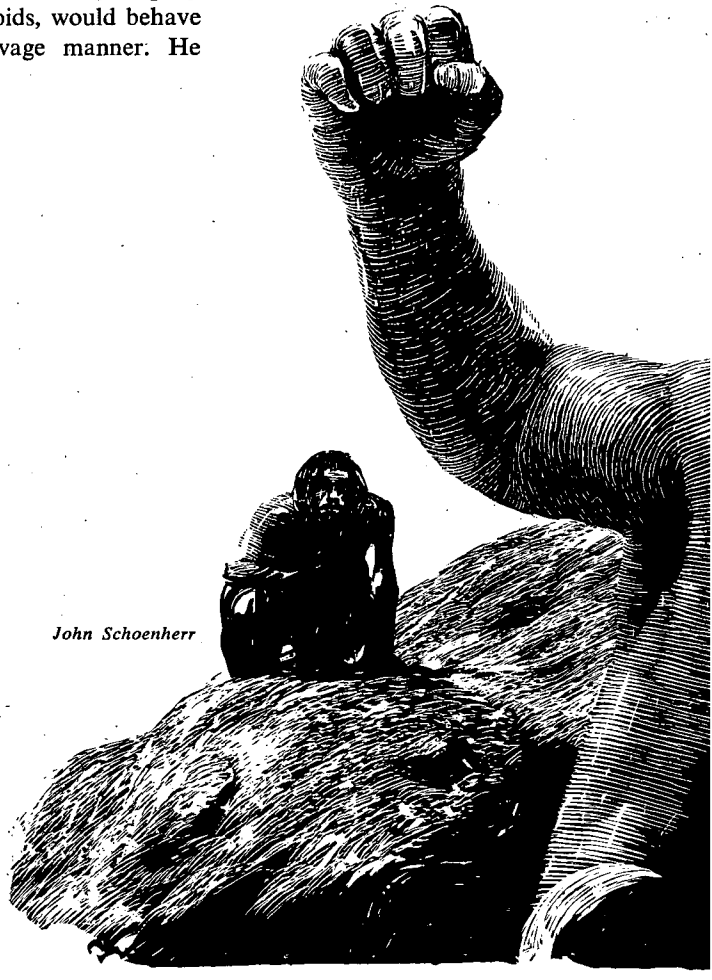
things that distinguishes them from animals."

Hiroa nodded. This was no time to point out the circularity of her reasoning.

"It's a matter of environment," Blanche continued. "A human child from Earth, if brought up by the local humanoids, would behave in the same savage manner. He would know no better. After generations of being shot and herded and butchered, they regard every stranger as an enemy. I can hardly blame them for treating me as one.

"But these kids are going to have a chance. They haven't been



John Schoenherr

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exposed to that environment long enough for it to make any impression on them—not any deep, lasting impression.

"By bringing them up as we would our own children, they will never know their racial background, never be exposed to the torment their parents had to go through. Instead, they'll learn the way you and I did when we were growing up. They'll learn English instead of the crude tongue of their parents.

"So far as I know, this is the first time this sort of experiment has ever been performed. This is a wonderful chance to add new knowledge to the anthropological field."

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Dr. Hiroa nodded slowly. "I believe you're right. I believe you will learn a great deal from this experiment, Mrs. Barlow."

"I'm certain I will. Our research contract with the Institute calls for three years work here. By the end of that time, we will have a great deal of data from the field investigations, and even more from Jane and Michael."

"Jane and Michael, eh? Yes. Yes, I think you'll learn a great deal from Jane and Michael. A great deal."

"Paul," said Dr. Marcus Landau, "I don't know whether your expression indicates disappointment or satisfaction."

Hiroa, Landau, and Pendray were sitting around a conference table in the Research Institute building; cups of coffee, notebooks, pencils, and reports littered the table.

"Neither," Hiroa said. "The fact is there; I merely accept it. I will admit I had hoped—strongly hoped!—that the Darotha would indicate the kind of imaginative streak I was looking for. The indications I got at first made me think that they would. But, as you can see from these reports, the situation has stabilized itself in the past year. Imagination for its own sake, the enjoyment of pure creative imagination, is a passing phase in the Darotha mind. The kids will indulge in it for a little while, but it eventually passes away. By the middle of the second year after they come out of the water, the phase has passed. They look back on it in the same way that an adult human looks back on the days when he or she thought that a cake-candy-and-ice-cream diet was perfect bliss, or that cutting out paper dolls was the greatest pastime in the world."

"But you haven't lost *all* hope, I think," Pendray said.

"No. Certainly not. There will be a few—one or two, maybe, in every generation—who will retain that creative streak. I don't know how long it will take, but I think the time will come when the Darotha will be innovators as well as good learners. I hope that—"

He was interrupted by a rap on the door. "Come in!"

Dr. Dennis Barlow opened the door and entered the room. "Hi, Paul, Marc, Jim. I hope I didn't interrupt anything. You did say fifteen thirty, didn't you?"

"That's right. Come on in. We were just finishing up. Pull up a chair and sit down. There's coffee in the urn over there and a clean cup next to it. Help yourself."

While Barlow got his coffee, Hiroa said: "I think that takes care of everything up to date, then. Next case. Do you have that file on Mike and Janie Barlow, Jim?"

"Right here." Pendray reached for a folder and drew it to him. "We're all learning something from those youngsters."

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Dennis Barlow sat down, took one sip of his coffee, and said: "Are they healthy, Doctor?"

"Physically, they're in the prime of condition. Mentally . . . well, who can tell at the age of fourteen months? We haven't got psychology tests that will tell us anything that early. How do they seem to you?"

Barlow grinned wryly. "They sure grow fast, don't they? They're as big and strong as four-year-olds. And the scraps they get into! It's amazing. They don't hurt each other, but they sure slap each other around. Have you been following the tapes?"

All three of the others nodded. "We've seen them," Hiroa said.

"Then you know what I mean. They'll play together nicely most of the time, but if one of them crosses the other, watch out! The other day, Janie was playing with her blocks, and Mike decided he wanted to play, too, so he grabbed a couple of them from her. He got another one right away—bounced off the side of his head. Blanche had to break it up, as usual. Grabbed them and shook them good and gave them a good talking to. She never spanks them, of course. We don't believe spanking is necessary for the proper upbringing of children.

"I think the trouble is that they're still as egocentric as any child of that age, but they're bigger than most kids and can take it out on each other physically, whereas most kids fourteen months old haven't got the strength or co-ordination to do that."

"Most *Earth* kids, you mean," Pendray corrected gently. "That amount of development at that age is not abnormal for Sandaroth humanoids."

"Really? That wasn't mentioned in any of the tapes."

"Well, we admittedly don't have much to go on," Dr. Landau said. "The adults won't breed in captivity, and—"

"I wouldn't either if I was put in a cage," Barlow interrupted with a grin.

Landau chuckled. "Anyway, as I was saying, we have no definite information. It's hard to follow individuals over a period of years, and this is the first time that any have been raised from infants. But the Darotha say that they mature very rapidly and that these kids are not at all abnormal for their age."

"Hm-m-m. Interesting. You've shown those tapes to Darotha, then?"

"Ghundruth has seen them," said Hiroa. "He's as interested in this experiment as we are."

Barlow's grin had faded away. "He would be. Breeding them like cattle would be easier than driving them to slaughter after rounding them up in the wilds. But you can tell him for me that neither of these kids is going to end up as a slice of *lurgh* on rye. And maybe

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none of the humanoids will in a few years."

"That, of course, will depend on your report to the Foundation," Hiroa said evenly. "Ghundruth admittedly has an interest. He and his people are as dependent upon the Yahoo herds as the Amerindians of the North American plains were dependent upon the bison herds some centuries back. When the bison herds were reduced to almost nothing, the Amerindian resistance to the white invaders collapsed.

"But Ghundruth isn't thinking of that, odd as it may seem. He is truly interested in knowing whether the humanoids are intelligent—humanly intelligent. The Darotha are an eminently ethical race, Dr. Barlow. Much more so than we are. If they find that the Yahoos are capable of intelligent behavior, there will be no need for us to protect the Yahoos with troops. The Darotha would never kill another one for food. In fact, if they decided that it had been their own fault that the Yahoos had never developed a culture of their own, they would do everything in their power to help them."

"I see." Barlow looked apologetic. "I'm sorry. Forget what I said. But for goodness' sake never say anything like that to Blanche. I'd rather you wouldn't even tell her that Ghundruth is interested or that he's seen the tapes."

"We won't," Hiroa said. "We respect your wife's convictions on the subject."

And her temper, Marc Landau thought. *The Golden Fury has become even more touchy since she has become a foster mother. Being beaten and stoned hasn't fazed her.*

"What sort of progress are the children making in learning to talk?" Pendray asked, steering the conversation away from the controversy.

"Just 'mama' and 'papa' so far," Barlow said. "But what more can you expect from a fourteen-month-old?"

"Please, Dennis; don't be defensive about it," Pendray said. "I don't *expect* anything. I just want information."

"Sorry. I'll try to keep my foot out of my mouth."

"That's O.K. They call you Papa and Blanche Mama, then, eh?"

Barlow frowned slightly. "No. Not yet. They use the words interchangeably so far." His frown dissolved into a smile. "They know that if they yell either word one of us will come running. I remember once when Mike was inside the playpen and Janie was outside. Something happened, and she grabbed his hair through the bars and started pulling. He couldn't get at her, and he started screaming 'Mama!' at the top of his lungs. I went in and made her quit. I suppose we ought to arrange it so that I only answer to Papa and Blanche

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only answers to Mama, so they can learn to differentiate."

Pendray nodded. "Yes. I suggest you try that. Otherwise, they have no reason to differentiate. Do they use the words at other times, for other purposes than calling for help?"

"When they're hungry. They come around four or five times a day with 'Mama, mama, papa, papa.' Practically in chorus. It means they're starving. And—boy!—can those kids pack away the food! Of course, they naturally would, growing at that rate. Their anabolism rate must be really high."

"I'm glad you brought that up," said Pendray. "I'd like to have you bring them around for a basal metabolism test sometime soon. Can you do that?"

"Sure. Whenever you like. How about at their regular checkup time, next week?"

"Fine. I'll arrange it. Is there anything else noteworthy?"

"Not that I can think of," Barlow said. "I do think it's a shame they don't have any other kids to play with. But they're far too big and rough for other kids their age, and the four- and five-year-olds are so far ahead of them in education that there's no communication. Besides, the neighbors won't allow it. They're so prejudiced against Yahoos that they're afraid of little babies. I suppose they think Mike and Janie would devour their kids alive or something."

"Probably," Hiroa said. "They have good reason. You saw what happened to the Yahoos that were shot that day as soon as your fliers left the ground. The game wardens got some very good tapes on that."

"Your own ancestors practiced cannibalism at one time, Dr. Hiroa. That didn't mean they weren't human."

"I suppose I should have the grace to blush," Hiroa said. "I don't. All of us have cannibals somewhere back in our ancestry. It's just that the last one of my anthropophagous ancestors lived somewhat later than the last one of yours."

"I might contest with you, Paul," said Dr. Landau with a benevolent smile, "the honor of having had the most recent cannibal on the family tree, but I won't." Then he looked at Barlow with the same smile. "The point that my learned Maori friend was attempting to make, I think, was not the fact of cannibalism *per se,* but the pattern of it. We are not talking now of the rare cases of extreme hunger, where men have been driven to the verge of madness or even beyond it. Those cases are exceptional and we know it. We are talking about cannibalism as a regular, normal practice. In every known case, there was a ritual of some kind connected with it, most especially if the sacrificial victim was a member of the same tribe or family group. Even when an enemy from another group

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was killed for that purpose, there was a certain amount of dignity and preparation.

"Our *human* ancestors, Dr. Barlow, *did not leap upon their own dead and tear them into gobbets as though they were a pack of wolves.*"

"Not so far as we know, maybe," Barlow said grimly.

"Not so far as we know," Landau agreed. "I admit the evidence is far from conclusive. In itself it proves nothing about the Yahoos. But it must certainly be taken into account, mustnt' it?"

"I think the most telling evidence will be Mike and Janie," Barlow said.

"Oh, indeed. Certainly," Landau said.

"I think that is one point upon which we are all agreed," Hiroa said in a carefully neutral tone.

Dr. James Pendray washed his hands in the lavatory in one corner of the surgery. "Janie will be all right, Dennis," he said without looking up. "Just make sure she doesn't pull those stitches loose when she wakes up."

"I hope she doesn't fight when she comes out of the anesthetic. She's getting to be hell on wheels. I didn't think she'd fight the needle that way." Dennis Barlow's voice sounded both worried and apologetic.

"How's Michael's black eye?" Pendray asked.

"It's O.K. Nothing to worry about. The swelling's almost gone. But where did he ever get the idea of biting his sister on the leg that way? If he'd popped her one on the nose, it wouldn't have been so bad, but those teeth of his inflicted a hell of a nasty wound."

"Yep," Pendray agreed, "he does have a good set of teeth for a two-year-old, doesn't he?"

There was silence while the doctor dried his hands carefully.

"Jim," said Barlow.

"Yes?"

"Don't say anything to Blanche, but I'm beginning to wonder if our hypothesis is as accurate as we thought it was."

"How so?" Pendray was carefully noncommittal.

"Well it's a general rule that the longer the time between puberty and adolescence, the greater the intelligence of the animal. Look at those kids! They look like ten-year-olds!"

"How's their vocabulary?" Pendray knew the answer; he was just pointing something out.

" 'Mama.' 'Papa.' "

"Differentiation?"

"None. They don't seem to know the difference between the words."

"If a chimpanzee is brought up in a human household," Pendray pointed out, "it can usually learn to say a few words. Simple ones."

"I know. I know." He paused, and when he spoke again there was

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anger in his voice. "But, Jim, they're *not* chimpanzees! Look at her!" He gestured toward the surgery table, where Janie lay sleeping under the influence of the injection Pendray had given her. "How can you call a creature as pretty as that an animal?"

"Human beings are animals, I think," Pendray said.

"Don't play around! You know what I mean!"

"Yes, I do. I'm just surprised to hear a zoologist using a word that has a scientific meaning as an emotional tag. They can't dress themselves yet, can they?"

"No, nor undress, either. They don't care whether they're dressed or not. But wouldn't you expect that of a two-year-old?"

"Yes. I'm not arguing with you, Dennis. You're arguing with yourself."

Barlow rubbed a hand across his face. "I know it. Damn! Damn! Damn!"

"What are you going to do about it, Dennis?"

Barlow took his hand away from his face. "What? Do about it? I'll go on with the experiment! It isn't over yet; it isn't over by a long shot. It hasn't had time enough yet."

"You and your wife are the sole judges of that, Dennis. It's your experiment. But—" He stopped.

"But what?"

"Getting emotionally involved in an experiment does not tend to make for an unbiased scientific observation of the results. No one can be totally objective about an experiment that is testing his theories, but—a man should try, Dennis. A man should try."

"So you see what we are trying to do, Dr. Barlow," Hiroa said. "Here on this planet, we can begin, for the first time in human history—and in Darotha history—to construct a civilization composed of two non-competing, fully co-operating, intelligent life forms. We are, in comparison with them, high on creative abstract imagination, and low in ethics. The reverse, obviously, is true of them. They can't operate very far from the sea, and they can't stand low humidity; physiologically, they're water wasters. They just aren't built to live in the interior of a continent. They can explore the interior, just as we can go skin diving. But they can't live there. On the other hand, they can do things in the sea that we can't.

"But if this experiment fails, we may never get another chance. That's why I don't want to see this planet opened up to the general run of colonists. I practically hand-picked every person here. We used the best psychological tests that we were able to devise to make sure that our people have an ethical standard well above the human average. Not intelligence particularly, but ethics. If the average run

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of colonists came here, the Darotha would very likely go the way of the Amerindians. We have to give them time to adjust to new technologies, to learn slowly that there are people who can't be trusted. The average colonist is a social misfit, and the ethical standards are actually below the human norm. The Darotha would trust them at first and be robbed and cheated and perhaps enslaved. Then that trust would turn to total distrust of every human being. It would take centuries to straighten the mess out —if, indeed, it ever could be.

"Do you see my point?"

"Certainly, Dr. Hiroa," Dennis Barlow said. "But how would a positive report on the intelligence of the Yahoos affect that?" Now, after three years, Dennis could use the word "Yahoo" without feeling guilty, although he never used it in Blanche's hearing.

Hiroa knew he would have to word his answer carefully. Any suggestion that the Darlington Foundation was a party to chicanery would be rejected out of hand. "There are certain unscrupulous business interests on Earth who want this planet opened up. Your report and those photographs would be used to inflame public sentiment against the Darotha if those unscrupulous men got hold of them."

"But suppose the Yahoos are humanly intelligent?" Barlow asked. "I couldn't falsify a report."

"Of course not! I would never suggest such a thing!" Hiroa said angrily. Then, more calmly: "Let us assume they *are* intelligent, that the experiment with Michael and Jane proves it. I assure you that the Darotha will be absolutely shocked, and will do everything they can to make up for what they have done. It will be up to us to provide a substitute food animal for them, of course, but we could find something—cattle, perhaps. Then we would have *three* intelligent races co-operating.

"In other words, I would like to have your report say that the Darotha no longer kill and eat Yahoos, that the problem *has already been solved!* That will render the information harmless. The unscrupulous interests would no longer be able to use it as a weapon. Do you see?"

"Certainly. I—"

The phone on Dr. Hiroa's desk chimed. He said, "Excuse me," and picked it up. "Dr. Hiroa here. Yes, Jim. *What?*" His eyes came up suddenly, focusing on Barlow's face. "Yes . . . We'll be right there!" He cradled the phone and stood up. "Let's go over to the hospital. There's been an accident."

Dennis Barlow was already on his feet. "One of the kids?"

"No. Your wife. I don't know how serious it is."

It took them five minutes to get to the hospital. Marc Landau was waiting for them in the lobby.

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"Where's Blanche?" Dennis half shouted. "What happened?"

"You can't see her now, son. She's in emergency surgery. Jim's working on her. She's in good hands. Just relax."

"What happened? How badly is she hurt?"

"We don't know what happened. She's . . . she's hurt pretty badly. Her condition is serious, but not critical, Jim says."

Dennis sat down. "Tell me what happened. I have to know."

"One of the neighbors heard her screaming, Dennis. Now, calm yourself. Johnson heard her screaming, and ran over. He had a hunch what it was, so he grabbed a club, a heavy walking stick, before he went." Landau stopped and bit at his lower lip before going on. "Dennis, those Yahoos were trying to kill her. They almost succeeded. Johnson was bitten on the arm, but he managed to knock them both cold. We have them locked up now."

"I can't believe it," Dennis said hollowly. But it was obvious that he did believe it. "Why? Why would they do such a thing?"

"We don't know. We won't know until Blanche can tell us. Was there no indication?"

"No," Dennis Barlow said dully. "No. None. You've read my progress reports. In the past year, the kids have quit fighting one another. You remember how they used to scrap. They don't any more. We thought it was a good sign. Why would a couple of three-year-old kids attack Blanche? Why?" He spoke in a dull monotone, as though he had been drained of emotion.

"They're only three chronologically," Landau said gently. "Physiologically they're about sixteen, if you judge them by human standards. Mentally? Well, I don't know.

IN TIMES TO COME

Next issue we feature "Down Styphon!" by H. Beam Piper.

This is one of the Paratime series about the Pennsylvania State Trooper who shifted sidewise in time. It is the last story Beam Piper lived to complete; he was working on a sequel at the time of his death. Someone, someday, may possibly complete "Hos Hostigos"; "Down Styphon" remains the last of the great Paratime series from the typewriter of a great, lost author.

The Editor.

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Johnson said they were screaming *mamapapa*! as they fought. Those are the only words they know, aren't they?"

"Yes." Dully.

"You're a zoologist, Dennis. What would you say was the life expectancy of a mammal that reached pubescence in thirty months?"

"About . . . about twenty years, maximum."

"Intelligence level?"

"Low. Bestial." He glanced up from the floor. "They're baboons, Marc. Baboons. Only worse. Yes! Worse!"

Hiroa looked troubled. "I didn't expect this to happen. I . . . I'm sorry I allowed it, Dennis. Terribly sorry."

"It's not your fault, Dr. Hiroa. It wasn't anyone's fault but mine. I saw it coming, but I wouldn't let myself see it—if you see what I mean. Blanche was even blinder than I was. I sometimes wondered if she'd ever see. I wonder if she will now. Will she excuse them again, even after this? Will she go on thinking of rationalizations for them?"

It was nearly twenty-four hours before they got the answer to that question.

"She's awake, Dennis," Jim Pendray said. "She's conscious. She'll be all right. She wants to see you."

He led Barlow to the hospital room and let him go inside alone, but he left the door open a trifle so that he and Hiroa and Landau could hear.

"Blanche. Blanche, honey."

She was swathed in sprayed-on bandaging, but she opened her eyes and tried to smile.

"Honey, what happened? Can you talk about it?"

She closed her eyes again. "It was horrible. Horrible."

"What happened?"

"I . . . I was working at my desk. I heard . . . funny noises." Her words came in short gasps. "I got up . . . went into the living room. Michael and Jane were . . . were on the floor. They were—*Oh, Dennis! They were making love!*"

"Yes. And then what?"

"I lost my temper, I . . . I went in and . . . and pushed Michael away from Jane. I . . . I slapped him. They both screamed and snarled and . . . and came at me like . . . like wild animals. I couldn't fight them . . . too strong. They bit and clawed and hit. I . . . I don't remember after that."

She was silent for a moment, then she repeated: "Like wild beasts." Then her eyes opened and she looked at her husband with wide eyes. "They're not human, Dennis! *They're just not human!*"

Outside the door, three men looked at each other with solemn thanks. ■

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THE VETERAN

Ever wonder what would happen to a strict Pacifist dumped into a situation where humanitarian motivation meant he had to fight. . . ?

BY ROBERT CONQUEST

Kelly Freas

The Veteran

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So the time-scoop was sent back —an operation so complex that half the world's computers had to be used for the calculation and so difficult that nearly half its power had to be fed into the converter. The emergency more than justified this.

Antrim, Chairman of the Council, watched the materialization. A faint glow appeared at the focus of the huge dome of matter-projectors which loomed in the darkness above him. The glow gradually assumed the form of an upright prism of glass and some red material, within which the figure of a man could be seen holding a black instrument. The focus was not yet perfect, but already his voice could be heard, too, though faintly. He was saying,

"Hullo. Is that the Peace League? . . . Hullo . . . Hullo . . ." Then the focus was complete. The object became solid. The nonorganic material disintegrated and the man from the past fell slowly forward unconscious, till he lay prone in midair in the soft grip of the web of forces directed on him.

Costa, the chronist, looked once more along the bank of instruments in front of him, then turned and said calmly to Antrim and the others:

"Everything has gone right . . . It will take an hour or so to check on his condition and to give him the hypno."

Antrim looked curiously at the naked man as he lay with his eyes shut in the twittering force field. Physically he was not impressive. It was good to note that his face, even unconscious, did not look relaxed: but it gave no strong impression of personality. And yet . . . Antrim remained perfectly convinced that this was the man who would save the human race.

As he turned to leave the building followed by the other councilors, he wondered vaguely what the scooped man's name was.

Hepple came to on a couch in the Council Chamber. A cloak had been put on him. His first thought was that there had been an accident and he was in an operating theater. Then the hypno-education took. He looked round at the dignifiedly garbed figures he now knew to be members of the Council. The one on the left sitting in what seemed to be a bowl of glass must be Antrim, its Chairman. He wore a green cloak which hung on him in sharp contrast to the others' purple.

Antrim rose. He was, after all, an imposing-looking figure and it was somewhat of a shock to Hepple when he said in a tired voice and with a right hand outspread in a somehow undignified gesture, "You must help us."

"Help you!" Hepple searched through his new information. Either it was sketchy through lack of time or it was not all readily avail-

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able to recall yet. He murmured, "The Nu?"

One of the Council, a pale-faced man, leaned forward and said, "Yes, yes!"

Hepple swung himself rather groggily into a sitting position. The material of the couch felt slick under his hands. He introspected again to find the human race at war with invaders of obscure origin who had appeared about a year earlier on the edges of the Solar System. War! That was something he had views on. And this was just the size audience that the League had found he was best at addressing—about fifteen of them, he judged. He looked round, catching their eyes in approved fashion. "You want to know why force doesn't work? How nonviolent resistance is the only way? Why . . ."

Antrim interrupted, "Mr. . . ."

"Hepple."

"Mr. Hepple, we know about that. There hasn't been a war in the Solar System for two thousand years. Our unity was achieved by nonviolent resistance. The whole of our existence is what you would call pacifist. But there is no need to sneer at us. We are the product of our times as you are of yours."

Hepple tried to put his hands in his pockets to mull this over but the cloak had no place for them. He flicked irritably at a short length of chain which hung from his collar clip, as he said in what was now a rather peevish tone, "I can't make head or tail of a lot of this hypno-education that tells itself it has been given me. You'd better tell me straight. If you know it all, why do you want me?"

The pale councilman spoke quietly to Antrim for a moment. Antrim nodded and again addressed Hepple, "What we don't know and what you shall tell us, is how to make war."

Hepple looked at him accusingly and shouted, "Aren't you ashamed of yourself?"

Antrim looked abashed and said, "Well, yes, we are . . . You see, we have tried nonviolent resistance —on Triton. The Nu paid no attention. They just killed everybody."

"Everybody?"

"Yes, everybody . . ."

"Well, that's not what we're taught should happen."

"The only early success we had was when a space-freighter captain, who the psychologist said had suffered brain injury from too long exposure to cosmics while carrying out emergency repairs, turned his spare converter into what you would call a 'bomb' and sent it into the middle of a Nu squadron in his lifeboat. That was in the Uranian system and they didn't make another try there for several months."

Hepple looked at him in a baffled way and finally said, "They must be different from human beings."

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"Yes, that is what Maxel"—Antrim gestured toward the man on his right—"our chief psychologist, says."

Hepple found himself not liking the way their hair—of all but two of the council was an exaggerated golden color—hung around their shoulders. His own seemed to have disappeared with all the other inorganic matter.

He nodded, a gesture he saw was being repeated by the other members of the Council. He said nothing. Antrim, who had sat down in his glass affair after his last remark, seemed to pull himself together. He rose again with an air of finality and said more formally, "We are delighted to meet you, Mr. Hepple, because we are sure you are the man who can save the human race. Although the matter is urgent, we can give you a few days to get oriented. You will be staying with Maxel here." Maxel got up and walked down to where Hepple was. The others followed. Antrim had already headed toward the door.

This was all too fast for Hepple. He shouted, "Hey! Wait a minute."

They stopped and turned around. One of them made a gesture quite different from looking at a watch in the twentieth century but just the same giving the impression of noting the time.

Hepple went on angrily. "Why on earth do you think I can save you?"

The man who had looked impatient, one of the two dark members of the Council though distinguishable from the other by what had once been thought of as a military mustache, said briskly, "Because you come from the War Age, of course!"

"But I don't know anything about war, I'm a pacifist!"

Antrim said, "You rather implied that, and it's a great pity. But we could only proceed at random, and we can't afford another try. Still," he added kindly, "you must have had more experience than the rest of us."

"I was only in the Fire Service for a bit of the war. We didn't even get any fires in my section."

"But still . . ."

Hepple looked at them angrily. He felt unwell. He said loudly and resentfuly, "I'm not an expert."

"We were not expecting an expert. We have books on strategy—they are, of course, kept under lock and key in the Black Room and open only to bona fide researchers. They have been studied thoroughly, but we lack the basic principles necessary to apply them. Our approach must be wrong in some way. You will be able to tell us." The mustached councilor tugged at Antrim's robe. They turned.

As the other councilors left, the psychologist Maxel leaned across the couch and said, "Mr. Hepple, you must, whether you know it or not,

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be far better versed, than anyone now alive, in these matters."

But Hepple thought he saw disappointment in the other's eyes. The drooping shoulders and general pessimistic appearance of the group now filing out of the room seemed to confirm this.

He said crossly to Maxel, "There must be *some* way of non-violently resisting."

The psychologist shook his head gently.

Hepple muttered in a less convinced voice, "I owe it to my ideals . . . the Peace League . . . What would Glanville say . . . Or McGregor . . . Or Mrs. Dobbs?"

The psychologist smiled encouragingly and said, "Come along."

He helped Hepple to his feet, and put his left arm through the other's right, as they began to walk towards a door on the other side of the hall. Hepple found he didn't like walking arm in arm. It also made him think that the psychologist was not very perceptive not to notice this.

Maxel took Hepple in a not very impressive looking ground car to a moderate-sized houselike structure built of some shiny material and surmounted by a small transparent dome, a mile or so from the government building. When they went in he presented Hepple to a girl who appeared at the head of the stairs—his daughter, Yan. She reminded Hepple very strongly of the private secretary at Slazenby's where he had been working. She even wore a hair style like the secretary's short bob. The main difference was that while the secretary was a self-possessed little thing, always ready to jeer at him, particularly when there were other less inhibited young men around, the present one was gazing at him in a visibly impressed fashion.

It was good to sit down to a meal, even the rather foreign, overspiced meats which were served him. He found himself so thirsty that the ice-cold beerlike drink provided with it went down comfortably. The girl continued to eye him in a demure fashion, while her father filled in about the Nu.

On things in general about human life in the solar system Hepple learned nothing that surprised him. He had never had much interest in the future, but developments seemed to have been of the sort people of his time had taken for granted as being on the way. Since he did not know that Mars and the outer satellites had not had decent atmospheres and were beyond the effective warmth of the sun he was not impressed by the fact that they were now inhabited by large colonies of human beings. Since he had only the vaguest idea of nuclear power the change to one hundred per cent conversion of matter to energy did not seem to be much of an advance. Since astronomical distances meant noth-

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ing to him the settlement of Pluto was no more impressive than that of the moon.

After dinner he went up to the transparent dome to be shown the night sky by Yan. They looked up through the dome at the sky. It seemed the same as ever in the dark. But on the moon, now in half phase, were the lights of various large settlements. He expressed polite interest. A thought struck him and looking round the sky a little nervously he asked, "Where is Triton?"

"Oh, you can't see that. It's right out circling Neptune." Yan shuddered and added, "It must have been frightful, all those Nu gassing and burning everybody."

Suddenly realizing that he had not been filled in on any of the events of his own time which had so deeply interested him, he asked about twentieth-century history.

It was not her subject, but she was able to tell him quite a lot. As she was describing the results of the Third Atomic War he said, "So they didn't abolish the nuclear weapons then."

"Yes, they did."

"No, I mean in my time."

"That's what I mean, too. They abolished them in nineteen-seventy-something, between the First and Second Atomic Wars. I remember it from the history books, because the conference was in Niagara where we used to have a cottage."

"You mean they really agreed to abolish them?"

"Yes."

"And they had atomic wars right after?"

"Yes . . . I never quite understood that."

In the morning Hepple had an argument with Maxel. A film of the bloodshed on Triton had shaken him considerably, even though he had been partly reconciled to the warrior role thrust upon him when Yan, at some stage the previous night, had looked at him with big eyes and said how wonderful it was that he was going to save them all. Still he now put up a stubborn set of arguments.

"What would I know about space fighting? I can't even pilot a spaceship!"

"Yes, you could. I had a hypnotape on you last night."

Hepple searched his memory and found that this was true. He fell back on pleading his convictions again. As before this proved futile.

"Of course. That is how we all feel."

In the end he was cornered into admitting that a pacifist, even from the Traumatic Centuries, was likely to have more violence in him, greatly though it was to his credit that he had overcome it, than the hereditary pacifists of the new epoch. He finally consented to accept a position as "Advisor."

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As the discussion finished a news report flashed on the communicator wall of the psychologist's office, which seemed to be part of the organization more or less passing for anti-invader GHQ. It gave an account of a Nu raid on Rhea, the farthest they had yet come in. The announcer, speaking from an advanced post on Iapetus, only a few thousand miles from the disaster, nearly fainted as he gave the unpleasant details. He added that a counterattack had been made by spaceships in the area, but it did not seem to have been very effective.

The psychologist rose, with beads of sweat on his forehead, and led Hepple to an office on the floor above. The sign outside it read "P. Hepple: Chief of Staff."

"That will have to be replaced—Advisor is what I'm going to be."

"Yes, of course."

They went in and Hepple seated himself in a luxurious chair in front of a table which looked as if it were carved from milk. He asked, "How do you get your men to attack?"

The psychologist looked ill at ease and explained that spaceship pilots, perhaps as a result of the long periods of solitude they put in, or the effect of cosmic rays on their brains, or simply—as he himself was inclined to believe—gravity poundings at take-offs and landings, sometimes became very antisocial. They threatened, and sometimes even on occasion used, force when they became involved in social conflicts. It was partly for this reason that the profession was not highly regarded in modern society. But from these aberrants it was possible to obtain a few hundred who were actually prepared to launch atomic torpedoes at the aliens and perform other warlike acts.

"But I want you to meet your assistant, Barr—a very capable young man."

Maxel pulled a gilded tassel on the wall. A few moments later a door leading to the adjoining room opened and a young man appeared, dressed in a particularly foppish toga. He came slowly across the room, with a friendly smile on his face, laid a hand on Maxel's shoulder and greeted him, "Hello. And this must be our new Chief of Staff . . ."

"Advisor."

"Well, anyhow we are delighted to have you. I'm at your service . . . But I just have to go back, if you don't mind: I was talking to Lura."

"Not Lura, the Arcticarch's daughter?"

"Yes, isn't she sweet? I was wondering whether some fire-opals would go with her hair. I was going to go round and see her this afternoon . . . Well, good-by for now."

As the door shut Hepple got up and walked past the psychologist

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to the left-hand wall of the room on which, he now saw, a surprisingly effective war map had been put up, assuming that it was up to date. Yes, the raid on Rhea was marked by a red arrow on the superimposed talc. Hepple was no expert in war mapping but he realized that he was taking in points which might have baffled someone unused to thinking in terms of competing sides. No brilliant schemes came into his head, however, and he was still noting the large blue question marks in the area of Neptune which indicated the zone first attacked by the invaders, when Antrim came in. He addressed Hepple directly.

"Well, Mr. Hepple, I expect you have some preliminary ideas."

For want of anything better to say Hepple replied that he would like to go over the details of the recent ineffective counterattack. "With the officers concerned," he added as an afterthought, partly with the idea that this would postpone action.

"Officers? Oh yes, the spacemen. I'll have them flown here by the end of the week."

During the week Hepple learned a little more, and saw a lot of Yan.

As the days passed Hepple grew impatient. On the eighth morning Barr came into his office with a white-haired and red-faced character considerably smaller than himself and clothed in a grayish cloak. Barr seemed to be a little timid with him.

"This is Helsing. He was in charge in the Rhea business."

"In command?"

"Yes. That is the expression."

Hepple said, "Well, Commander, perhaps you'll run over the battle for me."

"Ah, I'd like to have the other pilots in for that." Helsing, who did not give the impression of being a very aggressive character, added, "I could show you, but they would help and it would only irritate them . . ."

Hepple said, "Oh, all right."

Barr produced from the other room a string of a dozen or so other men. Like Helsing they wore slightly shabby-looking togas. Helsing introduced them: "Dabsie, Cloag, Spounda, Chomelson . . ."

Barr levered some couches out of the floor and set them to face the communication wall. The lights were turned down, and there appeared a stylized visual representation of the movements of the battle. Helsing explained as it developed. The human squadron had come in at a good rate from the Iapetus direction while the alien raiders seemed to be in an awkward position close to Rhea's surface. Both groups appeared about equal, but as the Earth ships reached a point about ten thousand miles from the enemy a further group of three or four aliens came very quickly round from the other

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side of Rhea, heading in a direction which would put them on the Earth squadron's flank. At once, the Earth ship nearest this new movement made a wide circle swinging away from it, and was soon heading back to Iapetus. After a moment of confusion the rest of the human squadron followed suit. A single explosion came from the middle of the alien fleet, though it was not indicated how it was caused or if any damage was done. The Nu did not give chase.

The lights switched up and Helsing, with a beam on his face, exclaimed, "And now I want to introduce you personally to the man who saved the day—Pilot Cloag."

A thin-faced man stood forward with a conscious smile.

"What did he do?" Hepple asked.

"Why it was he who noticed the enemy's reinforcements and quickly turned back, before it was too late."

Hepple felt a strange emotion. A couple of lines of poetry came to his mind:

> "A gray Gothaven 'speck-shioner—
> He that led the flinching in the fleets of fair Dundee."

Kipling. What was he doing recalling that imperialist? He walked back to his desk and sat as straight as he could on the chair. Evidently the pilots were more at ease now and were congratulating "Good old Cloag." Much to his surprise Hepple found himself shouting, "If your orders were to close, why the devil wasn't the attack pressed home? It's not up to junior officers to make decisions to retreat! What . . ." he paused, overcome by his outburst. He could almost feel the veins standing out on his forehead.

Helsing looked at him in astonishment and said, "But we were outnumbered. And we did save our fleet . . ."

"Outnumbered! By two or three ships! If you stop fighting on any old excuse, you'll never win a battle."

Barr said soothingly, "I don't think you quite understand, Hepple. Even though they may be fiercer than the rest of us," he waved a hand towards Helsing and the rest, "pilots are reasonable men and cannot be expected to act in a grossly illogical way."

Hepple found himself getting red again. At that moment the door from Barr's room burst open and a short and thick figure with a bald head crashed in. He was wearing a pair of dirty dungarees. He shouted, "You . . . you lily-livered pack! Thought you could keep me away."

Helsing said sharply, "Woff, you were fired. You have no right to be here."

"I had a ship, didn't I? I threw a bomb, too."

Barr turned to Hepple and said "I'm very sorry about this. Woff is practically a maniac. He can't be

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trusted with a ship or anything else. He actually offered violence to Helsing and one or two of the others back on the Iapetus space field. I can't think how he got back here."

Hepple said, "The rest of you clear out at once. Mr. Woff, please stay, I want to talk to you."

Half an hour later Woff was saying, "And another thing, you look at the maneuvers in any of these so-called battles. They don't turn their ships fast enough."

"Why?"

"Well, you black out. It's dangerous. Ordinarily they are turns you only make to save your life. Well, they won't make them to win battles. I think the aliens may be weaker on gravity than we are, and once we get in among them that might make all the difference, properly used."

"Well, you're a commodore."

"A what?" Woff said.

Hepple explained the idea of rank and the notion of carrying out orders."

Woff thought a moment and said, "Yes, I can get a few dozen good ones—better than having hundreds like Helsing. But I'll only do it if you come with me."

After a long pause Hepple said, "All right. And another thing," he added, "those clothes you're wearing."

Woff looked a trifle sheepish and said, "Well I had to slug a maintenance man and curl up in a transceiver bay and we only arrived at the spacefield a short time ago, so I didn't have time . . ."

"No, no. That's fine. We'll make them the fleet's uniforms—clean ones, I mean."

Woff grinned.

"We might even have a Women's Auxiliary," Hepple suggested.

"Women? Yes, they'd fight fine. I've noticed that they don't seem to mind violence as much as some of these lads."

"Women for fighting. Of course not!" said Hepple, astonished. "It's a shocking idea."

Two years later, Solar Marshal Hepple got back to his house from the ceremony rather late. The sunburst of the just awarded Star of Victory First Class hung heavily from his chest below the six stripes of earlier medal ribbons. As he walked a trifle wearily through the great doorways the guards sprang to attention—rather sloppily, he noticed. They were from Colonel Saim's Callistan Space Marines. He would have to speak to him about it. He mounted the old-fashioned stairs with a determined stride, as if consciously overcoming his tiredness with a view to the new task he had set himself. Passing his wife's boudoir without a glance, he turned left into his study and looked at the heap of files on his desk with a happy smile.

He was going to write his memoirs. ■

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William Hulett and
Alexander W. Hulett, M.D.

SNAKEBITE!

It started as a High School Science Fair project— investigating an old legend— but it came up with a new and effective treatment for snakebite. Discoveries don't care who make them— or how old they are!

Photographs by Parker

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Although snakebite isn't one of the more glamorous diseases that plague mankind, even in the twentieth century, it is still an important entity. The yearly mortality runs about as follows:

World-wide: 30,000-40,000

North American Continent: 300-400

Continental USA: 30-40

Also snake venom poisoning occurs about ten times more frequently in dogs than in humans. It is estimated that over ten thousand domestic animals are bitten in the U.S.A. every year. The importance of snakebite to most of us is due to the economic damage done to the animal population rather than the pain, suffering and death of an individually sustained snakebite.

Still about 3,000-4,000 people are bitten by poisonous reptiles each year in the U.S.A. Coupled with the actual danger of snakebite is the morbid fear that most people have toward all snakes. To the consternation of all biologists and conservationists people go out of their way to kill any and all snakes—even those which are the most beneficial to the ecology of the area; little realizing that the destruction of harmless reptiles leads to the increase of their natural antagonists, the poisonous varieties.

The harmful action of snake venom can roughly be divided into two main groups:

(1) The NEUROTOXIC or nerve damaging poisons

(2) The HEMATOXIC or blood damaging poisons

The only variety of snake producing a venom mainly of the first type in America is the Coral snake of Florida and the Gulf lowlands. Far more numerous are the snakes producing the latter type of venom —the pit vipers. They are found in all the states and include all varieties of rattlesnakes, the copperhead, and the moccasin. Since over ninety-nine per cent of all poisonous snakebites are caused by pit vipers, most attention has been directed toward the treatment of these bites.

CURRENT THERAPY OF SNAKEBITE:

Therapy of snakebite has been essentially unchanged over the past fifteen-twenty years; it consists of three main types:

(1) MECHANICAL REMOVAL OF VENOM: This is the time honored "Boy Scout Method." It consists of a tourniquet to prevent spread of the venom and incision and suction of the fang punctures. This type of treatment reminds one of the medical student's question: "What's the first treatment for a burn?" The answer: "Remove the affected part from the fire." (This type of Q & A often leads to a career in vaudeville instead of medicine.) Essentially the effectiveness of this treatment is indirectly proportional to the elapsed time from the time of the bite to the time of treatment. After a short period of

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time—10-30 minutes—it is practically useless—still the removal of only a small part of the venom injected has some merit so this procedure is in vogue. If not by most physicians, it is at least by most patients and their family and their friends.

If the more modern physician can convince the patient's family that by withholding this mechanical removal he is not endangering the patient's life, he might proceed to a better method: That of Crymotherapy—the use of ice to cool the affected part thus slowing blood flow and absorption of the venom—the theory being that trace amounts of venom slowly absorbed over a long period of time can be de-toxified by the natural body defenses.

(2) GENERAL SUPPORTATIVE TREATMENT: This often means the physician can do very little to affect the causative agent so he'll just treat the symptoms as they appear. This includes the treatment of *Shock* (intravenous fluids—blood, plasma, glucose; bed rest; warmth; mild stimulants), *Pain* (local applications of cold; analgesics from aspirin to morphine), *Infection* (antibiotics; sulfa drugs) and the prevention of tetanus by tetanus toxoid or antitoxin injections.

(3) SPECIFIC THERAPY: There is a commercially prepared antivenom available (*Antivenin*—made by Wyeth Laboratories). This injectable material consists of venom antibodies commercially prepared by the injection of horses with the venoms of several North American pit vipers. Serum is removed from the horse, purified, standardized, and dried for preservation. When reconstituted by the addition of sterile saline solution this material specifically neutralizes the toxins present in pit viper venoms.

Of course along with the venom antibodies the patient gets a healthy dose of horse serum which in itself is occasionally toxic to some sensitive patients. Because of the presence of horse serum this treatment must be used with care. Tests for sensitivity must be done before *Antivenin* can be used. Reactions of persons sensitive to horse serum range from mild allergies to lethal serum sickness.

"In general, administration of *Antivenin* is contraindicated in persons showing sensitivity to horse serum, but the acute emergency presented by the severely snake bitten patient may warrant the risk of a sensitivity reaction to horse serum"—this quotation is just a polite way of saying the physician must be a gambler and play the odds as to whether the untreated venom is more dangerous to the patient's health, or if the treatment is most dangerous—and proceed accordingly.

EXPERIMENTAL OBJECTIVE: To find a better specific treatment

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of snakebite:

The basic idea for this research comes from a common belief in rural areas—it is believed that the king snake is immune to the bite of its natural enemy, the pit viper.

Now the mongoose—a weasel-like carnivore of the Herpestinae family—is a natural enemy of the Cobra and other serpents of India. It not only destroys the eggs and the young but also kills the most venomous adult varieties. The mongoose is not immune to cobra venom, falling a victim as rapidly as any other mammal when bitten. However by agility and quickness of eye it avoids the reptile's fangs and kills by fixing its teeth in the back of the cobra's neck.

The king snake also relies on agility and speed. It kills the pit viper by constriction of the body and by choking the viper to death. However, many believe that the king snake is frequently bitten but, because it is naturally immune to venom, is not harmed. (After a long search through the literature one reference was found where it was reported that a king snake—in a zoo—was bitten by a poisonous viper and survived. This was reported in 1910 in Ditmar's book: "Reptiles of the World."

The purpose of the experiments will be to determine the presence or absence of a naturally occurring substance in the serum of the king snake (*Lampropeltis*) that specifically neutralizes pit viper venom. If found, its effectiveness will be compared with that of the commercially prepared *Antivenin.*

Both *in vitro* and *in vivo* tests are used; the *in vivo* tests are confined to the golden hamster (Mesocricetus auratus). This animal has not been previously reported used in any research on venoms, but, because of its ease of breeding and care, it is selected for the experimental animal.

A further search of the literature was made and it was found that only two papers have been published in the past forty years that considered use of snake serum—of any variety—for the treatment of venom poisoning. One was very pro; the other was equally con. Both had used white mice as the test animals.

This research work was started and completed by the junior author (Bill) as a Science Fair Project. The senior author (Alex) only acted in a supervisory capacity and contributed an amount of research at the beginning and ending of this paper in the fields where a high-school boy couldn't have the necessary background for study. It can also serve as an outline for similar work by any "gentleman amateur scientist." Before the family and friends of such scientist—be he high school amateur or "gentleman" amateur—recoil in horror at the thought "of messing with those slimy little snakes" and killing those "cute little hamsters" or even the

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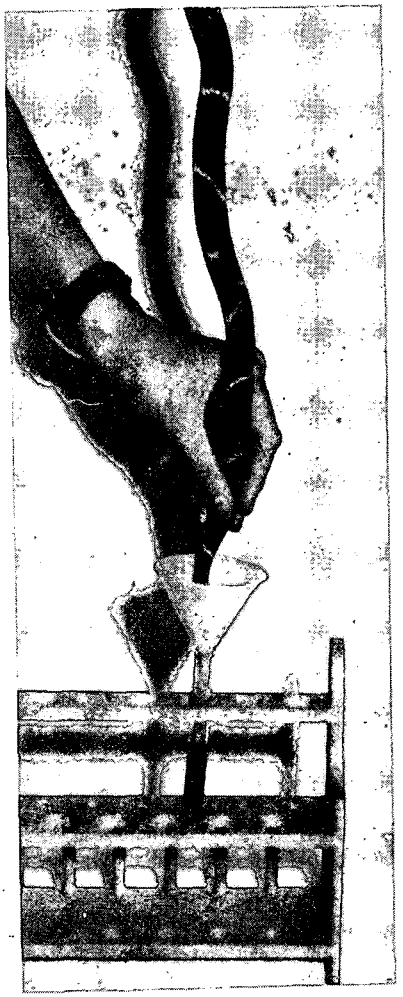
neighbors' children with pit-viper venom consider the following: At the last meeting of our District Science Fair, the director stated that he appreciated the time put on such projects in our busy age—especially the time spent by the teen-agers when such time could be placed to more advantageous use such as stealing hub caps and robbing cigarette machines. Therefore, before roof-raising when the animal cages aren't cleaned on time or the drugs eat holes in the rugs, remember the amateur scientist's efforts in his home laboratory could easily be spent in other pursuits; and, encourage more research.

INVITRO TESTS:

Discussion: The hemorrhagic effect of pit-viper venom is due to the action of a proteolytic (protein digesting) enzyme present in the venom. A better name for this enzyme would be PROTEASE. This enzyme digests the cell wall membrane of the red blood corpuscle resulting in leakage of the contents; also it digests the protein cellular walls of the capillaries and other small blood vessels causing leakage of the blood out of these vessels into the tissues.

The presence of this proteolytic enzyme (*Protease*) was found to be easily demonstrated. A simple source of protein is found in the gelatin layer on Kodak film. A drop of venom placed on Kodak film will digest the protein gelatin layer in



Extracting blood from a somewhat uncooperative King snake. King snakes are constrictors, grow five to six foot lengths, and are decidedly powerful animals. Normal diet: rats, mice, frogs and—poisonous snakes.

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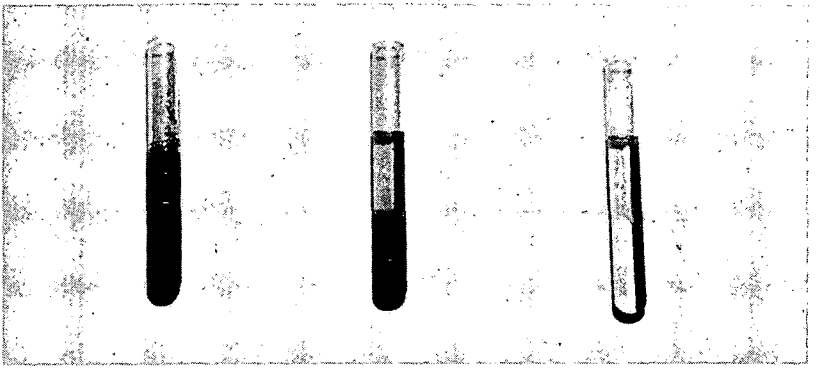
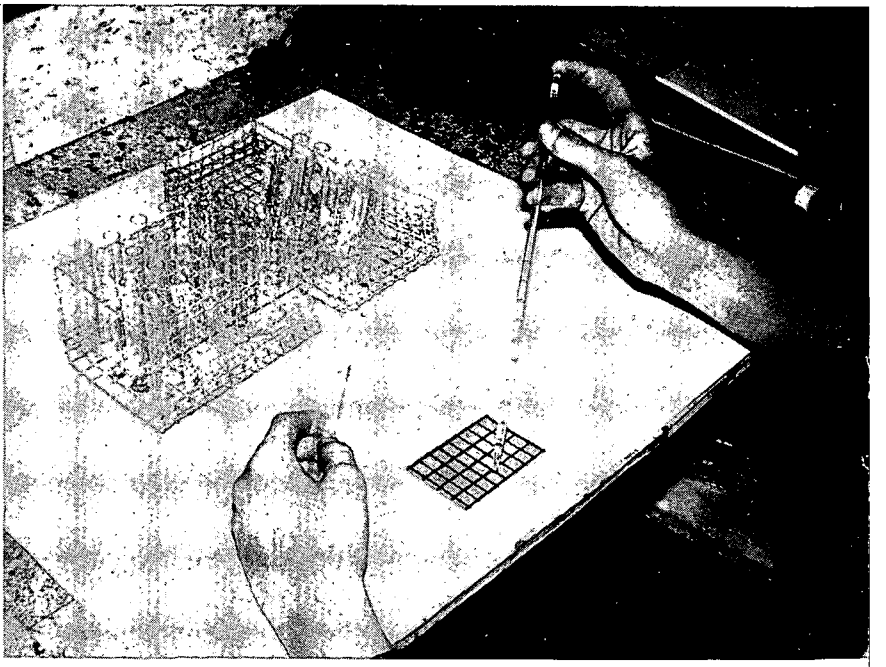


King snake blood being separated to collect the clear serum.

Serial dilution of three kinds of poisonous snake venom in isotonic saline solution is tested by putting drops on sheets of photographic film.



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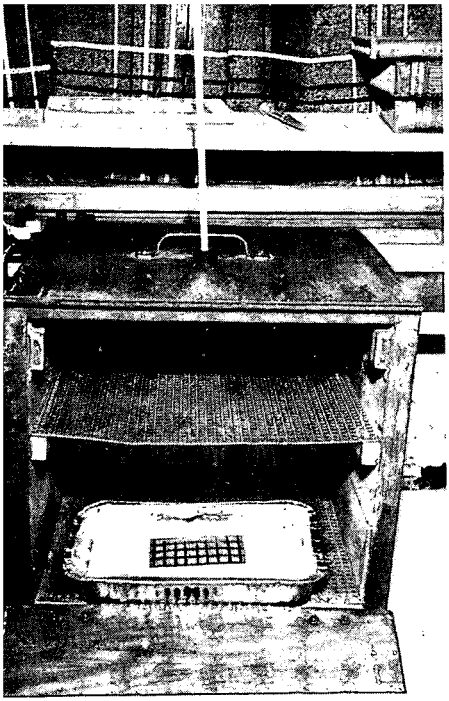

Simple home-made incubator for "developing" the films. The poison is essentially an enzyme, and like other enzymes, works best at about body temperature; "development" of these films then is, like ordinary photographic film, by "time and temperature"— in this case, an incubator temperature.

William Hulett making the test that really counts— the effect of King snake serum in protecting a living mammal (hamster) against the poison.

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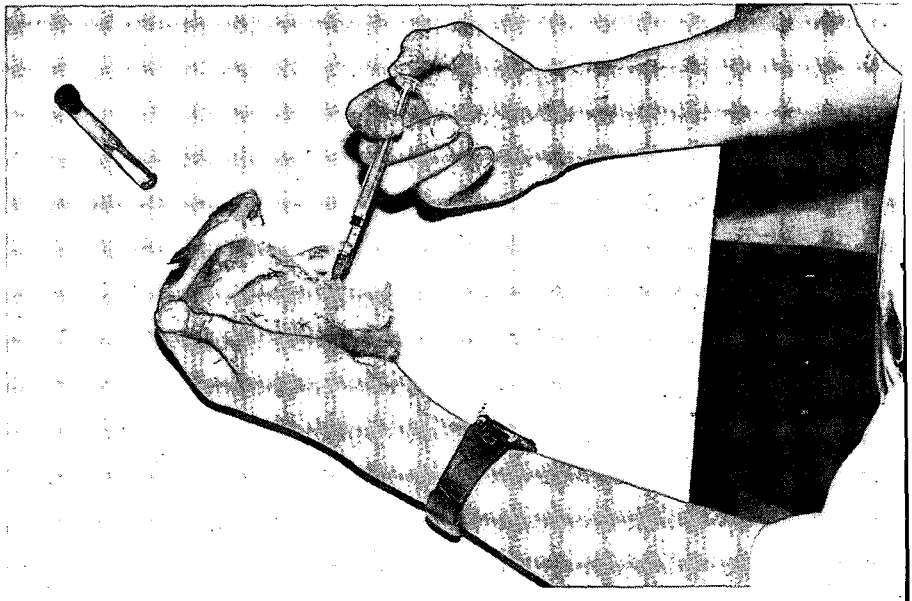
direct proportion to the concentration of venom employed and the time it remains in contact with the film. Conversely any material that would neutralize the effect of venom will inhibit this protein digestion.

Briefly these tests consisted of using serial dilutions of venoms (in strengths of 1/100 to 1/25,600 mixed with equal parts of the substance being tested—a small drop (0.02 ml) being placed on Kodak film (the emulsion or gelatin side). Test substances used were: (1) saline—for a blank. (2) King snake serum. (3) Human serum for a control. (4) Wyeth's *Antivenin.* The film was placed in a moist, warm environment for one to two hours, and then washed in tap water. Digestion is easily seen with the naked eye as the digested layer of gelatin—yellow emulsion—washes away leaving a clear spot on the Kodak film.

The Sigma Laboratories, St. Louis, Missouri can supply 25 Mg of dried venom—various varieties—for two to three dollars. It's cheaper from Ross Allen's Reptile Institute, Silver Springs, Florida, but one must buy it in 1 gram lots.

Serial dilutions can be approximated by cutting successive solutions in half with saline solution—

Interperitoneal injection—a little rattlesnake poison, to be followed by a little King snake protective serum.



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½ teaspoon of salt in 1 cup of water makes a good substitute.

Kodak film costs fifty to sixty cents and a darkroom isn't even needed.

Any warm-moist environment can be improvised by the simplest means possible although a lab incubator would be best. A home-made plywood incubator was used with a light bulb as the source of heat and pieces of moistened blotting paper lying about.

After the film tests are made the film keeps better if it is developed and fixed in the usual manner.

The king-snake serum is a little harder to obtain. Any small harmless snake such as a racer, grass, garter, et cetera, could be used as a source of serum and would probably show some effect in its serum. Although the king snake (Lampropeltis) has a stronger action these others, being from similar species, would work O.K. if not as potent.

A small piece (¼-½ inch) of the tail is snipped off with scissors and the snake held vertically; a few drops of blood collected. The serum will separate from the red cell mass (clot) after standing a few minutes, although the use of a centrifuge for separation would be easier.

For the squeamish, or for those who don't have a Boy Scout handy to catch a snake, or a friendly zoo-keeper to get one from—the fresh frozen serum of all varieties of snakes can be obtained from Ross Allen's. It's shipped packed in dry ice via air express for about fifty cents per ml—it's much cheaper to gather one's own.

Wyeth's *Antivenin* can be purchased from any large drugstore for about ten to twelve dollars for 10cc, which is enough for many many tests. This part of the test can be eliminated since it's well known that *Antivenin* works—but it makes a good standard of comparison for the king-snake serum.

The basic *in vitro* tests can be made in an evening and anyone can easily demonstrate the proteolytic effect of pit-viper venom and the inhibiting effect of king-snake serum by this simple film test.

Film tests were made of:

(1) Cottonmouth moccasin (A. piscivorus) venom

(2) Eastern Rattlesnake (C. adamanteus) venom

(3) Western Diamondback Rattlesnake (C. atrox) venom

See Chart I and sample film strips. (Complete digestion reported as plus; incomplete digestion reported as plus/minus; no digestion reported as minus.)

CONCLUSIONS:

(1) All three venoms demonstrate a strong proteolytic activity. Very weak solutions—large dilutions—show protein digestion. Moccasin venom was the most proteolytic venom tested showing protein digestion in dilutions as low as 1 part in 12,800.

(2) Human serum showed very

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little inhibition of this proteolytic activity—this mild inhibition may be due to the "competition effect" since both human serum and gelatin contain protein and these proteins "competed" with the venom for "digestion." However, there was no real inhibition exhibited.

(3) Both *Antivenin* and king-snake serum inhibited the proteolytic effect to a marked extent. The king-snake serum inhibited larger concentrations of venom than *Antivenin* in two venoms: moccasin and western rattlesnake. King-snake serum showed less effect than *Antivenin* on the eastern rattlesnake venom.

Note: this *in vitro* inhibition was confirmed by the *in vivo* tests.

EXPLANATION:

(1) The action of *Antivenin* has been explained by the well-known antigen-antibody reaction whereby the horse serum antivenom antibodies combine with the venom toxins and neutralize them.

(2) The action of the king-snake serum is believed to be due to the presence of a naturally occurring anti-proteolytic enzyme present; also it could be called ANTI-PROTEASE.

IN VIVO TESTS:

The basic *in vivo*—live animal—tests are a bit more difficult but not beyond the range of the "gentleman amateur scientist". Almost any small laboratory animal can be used. If other than mice are used, one must determine the lethal (LD_{50}) dose of each different venom on each different laboratory animal as venoms vary from type to type and each animal has a different dose per unit of body weight. The 18-gram white mouse is the most commonly used laboratory animal for venom experiments and results can be compared with known values obtained by the large laboratories. We used hamsters in these experiments starting off with a male and three females and raised the ninety or so animals used—it was much more fun (and original) to use an animal not used by the "million dollar" laboratories.

Raw untreated king-snake serum was found to be toxic on injection in hamsters—this was to be expected as blood and/or serum from un-related species is often toxic to mammals. The lethal dose of raw serum was not determined but as little as 0.5 ml killed hamsters on injection.

King-snake serum was easily detoxified by heating on a water bath for thirty minutes at 56° C. The maximum safe amount of this "detoxified serum" was not determined but animals tolerated six times the effective therapeutic dose of king-snake serum without ill effect. The detoxified king-snake serum was found to be just as effective as the raw king-snake serum on the *in*

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CHART I

MOCCASIN VENOM

DILUTIONS / Added:	1/200	1/400	1/800	1/1600	1/3200	1/6400	1/12800	1/25600
Saline (blank)	+	+	+	+	+	±	±	–
King-snake serum	+	–	–	–	–	–	–	–
Human serum	+	+	+	+	+	±	–	–
Antivenin	+	+	–	–	–	–	–	–

EASTERN RATTLESNAKE

DILUTIONS / Added:	1/200	1/400	1/800	1/1600	1/3200	1/6400	1/12800	1/25600
Saline (blank)	+	+	+	+	+	–	–	–
King-snake serum	+	±	–	–	–	–	–	–
Human serum	+	+	+	+	+	–	–	–
Antivenin	+	–	–	–	–	–	–	–

WESTERN DIAMONDBACK RATTLESNAKE

DILUTIONS / Added:	1/200	1/400	1/800	1/1600	1/3200	1/6400	1/12800	1/25600
Saline (blank)	+	+	+	+	+	–	–	–
King-snake serum	+	–	–	–	–	–	–	–
Human serum	+	+	+	+	–	–	–	–
Antivenin	+	+	–	–	–	–	–	

(Plus denotes digestion; minus denotes no digestion)
(Plus/minus denotes partial digestion)

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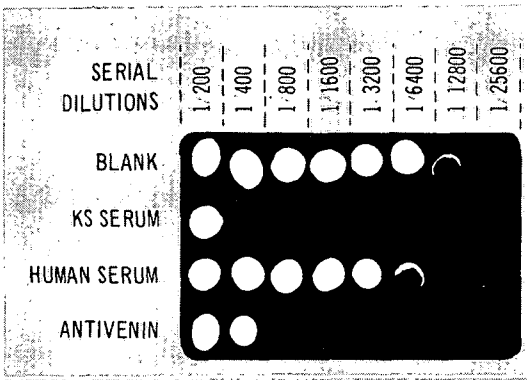
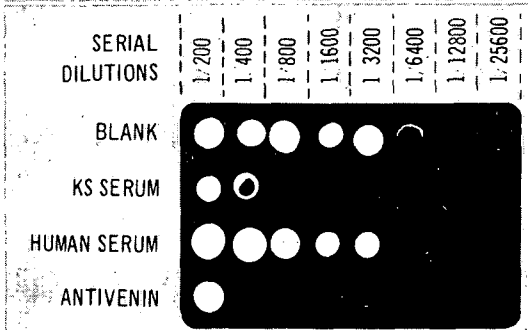


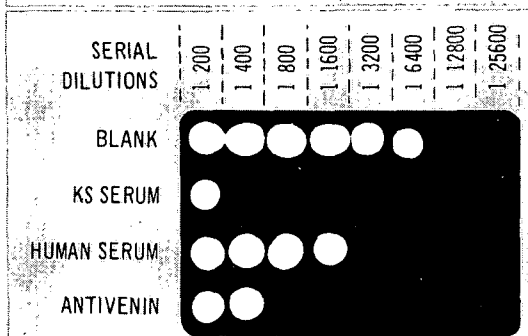
COTTONMOUTH MOCCASIN VENOM

NOTE:
1. Strong proteolytic activity the digestion of gelatin in low concentration.
2. KS serum inhibits stronger concentrations than Antivenin.



EASTERN RATTLESNAKE VENOM

NOTE:
1. Proteolytic activity the digestion of gelatin in moderate concentration.
2. Antivenin inhibits stronger concentrations than KS serum.



WESTERN RATTLESNAKE VENOM

NOTE:
1. Proteolytic activity the digestion of gelatin in moderately low concentration.
2. KS serum inhibits stronger concentrations than Antivenin.

Results of the film tests of the three different snake poisons on the gelatine of the film, with blank (pure diluted poison), KS Serum (King snake) and Human serum (we clearly have little defense against the toxin!) and commercial Antivenin.

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vitro film tests previously described, so the *in vivo* testing proceeded as the "anti-proteolytic substance" appeared to be heat stable at the temperature required to detoxify the serum.

LD_{50} doses—that amount of venom required to kill fifty per cent of animals under test—of all three venoms were found by trial-and-error methods and were found to be as follows in our animals:

Moccasin: 16.5 mg/Kg body weight ($\pm$ 2.8 mg)

Eastern rattlesnake: 7.5 mg/Kg body weight ($\pm$ 1.3 mg)

Western diamondback rattlesnake: 14.0 mg/Kg body weight ($\pm$ 2.1 mg)

These toxic doses were about four times as high as those reported by the Wyeth Laboratories (makers of *Antivenin* as the doses used on mice—but since no one else has ever used hamsters as a test animal we concluded that evidently the hamster is naturally more resistant to venom poisoning than mice as it takes larger doses per gram of body weight by peritoneal injection to kill one.

First a series of tests were done on LD_{100} Doses—the minimum amount of venom necessary to kill one hundred per cent of animals under test—or the *Certain Lethal Dose*. These results are reported on Chart II.

CONCLUSIONS:

(1) Detoxified king-snake serum is just as effective as *Antivenin* for the treatment of moccasin venom.

(2) Detoxified king-snake serum is less effective as *Antivenin* for the treatment of western diamondback rattlesnake venom.

(3) Detoxified king snake serum is no good in the treatment of eastern rattlesnake venom; also, *Antivenin* is not as effective in the treatment of this venom as it is on the other two.

It is believed that the reason for the failure of king-snake serum on eastern rattlesnake venom is due to the fact that the venom used appeared to have some strong neurotoxic effect. The animals appeared to die from stimulation of the central nervous system with convulsions, et cetera, rather than from blood destruction and hemorrhage. Venoms often vary from snake to snake even of the same species and can vary from day to day both in strength and composition even in the same animal.

A second set of experiments was done using two and one-half times the lethal dose (LD_{50}) of moccasin venom, or an *"Overkill Dosage"* just to see how effective the king-snake serum was. The results are recorded on Chart III. The results exceed expectations as the dose of moccasin venom that completely overwhelms the standard therapy, *Antivenin*, was easily handled by small amounts of detoxified king-snake serum. The ED_{50}—effective dose that saves fifty per cent of ani-

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CHART II

Number of Animals	Antidote Used	Hours Lived	Average Hrs. Lived	Per cent Lived	Per cent Died
24 mg/Kg body weight of Moccasin Venom					
3	None (Control)	5, 8, & 10	8	None	100%
3	Antivenin 6 ml/Kg Body Wt.	all over 48	over 48	100%	None
3	King snake Serum 6 ml/Kg Body Wt.	all over 48	over 48	100%	None
12 mg/Kg body weight of Eastern (Florida) Rattlesnake Venom					
3	None (Control)	6, 7, & 8	7	None	100%
3	Antivenin 6 ml/Kg Body Wt.	10, & Two over 48	35	67%	33%
3	King snake Serum 6 ml/Kg Body Wt.	4, 6, & 7	6	None	100%
3	King snake Serum 12 ml/Kg	4, 4, & 5	4	None	100%
20 mg/Kg body weight of Western Diamondback Rattlesnake Venom					
3	None (Control)	4, 5, & 7	5	None	100%
3	Antivenin 6 ml/Kg Body Wt.	All over 48	over 48	100%	None
3	King Snake Serum 6 ml/Kg Body Wt.	8, 15, & over 48	24	33%	67%
3	King Snake Serum 12 ml/Kg Body Wt.	All over 48	over 48	100%	None

Treatment of Lethal Doses (LD_{100}) of Pit Viper Venom by Intraperitoneal Injection in Golden Hamsters (young adults).

Animals living over 48 hrs. continued to live for indefinite periods of time. Avg weigh ♂ 100 gm Avg weigh ♀ 85 gm

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CHART III

Use of King Snake Serum

Volume Used ml/ Kg Body Wt.	*Number of Animals*	*Number Lived*	*Number Died*	*Hours of Survival*	*Per cent Lived*
0.75 ml	3	0	3	9, 10, 13	None
1.5 ml	5	2	3	6, 10, 16	40%
3.0 ml	5	4	1	11	80%
6.0 ml	3	3	0	——	100%

Use of Antivenin

3.0 ml	2	0	2	4, 6	None
6.0 ml	2	0	2	2, 27	None
12.0 ml	2	0	2	10, 10	None
24.0 ml	2	0	2	28, 28	None

Cottonmouth Moccasin venom used in a dose two and one-half times the minimal lethal dose (2½ LD_{50}) or 40 mg/Kg of body weight given by intraperitoneal injection to Golden Hamsters. Treatment also given by intraperitoneal injection at the same time.
This chart shows that King Snake Serum is a very effective treatment for Moccasin venom while Antivenin is ineffective.

mals under test—was found to be about 2.0 ml of king-snake serum per Kg of body weight.

Also just to prove that this is not just a simple mixing of two antagonistic substances in the abdominal cavity of the animal, we injected lethal doses of mocassin venom in the muscles of the hamster and treated them with king-snake serum by the intraperitoneal route. At present the series on these tests is not large enough for statistical analysis—but the king-snake serum seems to work just as well. (NOTE: Some might say that an injection of HCl or NaOH alone into the abdominal cavity of an animal kills it but the mixture of the two results in NaCl and H_2O—or harmless physiological saline solution. Injection into different body sites with mixing and buffering in the animal's circulation system would preclude such objection. The main reason for using the abdominal cavity of a small laboratory animal is that absorption is very swift—almost as rapid as an intravenous injection and time factors of absorption are eliminated—it would be practically impossible to do intravenous injections on small animals such as the hamster or mouse.

Also no pain or suffering was allowed—all animals were protected

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by adequate doses of local anesthetic (Novocain) at the sites of injection and use of synthetic narcotics (Demerol) was liberally employed. Any animal appearing to be in severe intractable pain or near death was destroyed painlessly by chloroform. (The animals treated by king-snake serum appeared to be unharmed by venoms and required little or no additional therapy for pain.)

CONCLUSION:

A. King-snake serum (detoxified by heat) contains an effective pit viper venom neutralizing substance.

B. This substance works by specifically neutralizing the proteolytic effect of venom by an anti-proteolytic or anti-protease effect in both *in vitro* and *in vivo* tests.

C. It has no effect on any neurotoxic venom or neurotoxic containing venom.

D. Results of *in vivo* and *in vitro* tests seem to confirm each other.

E. It appears to be safe and where effective to be far superior to the specific antibody neutralizing substance, *Antivenin*.

ADDENDUM:

Obviously this whole field needs more work.

Obviously its ramifications are not going to be solved by a high school boy in a home laboratory with an expenditure of less than one hundred dollars.

Obviously those who contribute to research—both the people (bleeding hearts and do-gooders) and the government (politicians) aren't interested in Snakebite—after all who gets bit? Only a few Seminole Indians in the Florida Everglades and a few Mexican sheepherders in the west. The few hunters and trappers (sportsmen) aren't yet being subsidized, zoo-keepers should know better, snakes seen in bars are of the pink variety and nontoxic . . . so who really cares about snakebite?

A moment's reflection might cause some to become interested in this "substance" in snake serum. Its use in Snakebite is possibly only a dramatic method of attracting attention to its other uses. Having read this far because of an interest in "Snakebite" might cause a consideration of the following:

How many diseases produce their harmful effect by the destruction of body protein tissues and could these destructive effects be due to a proteolysis or digestion of the tissues involved? If so, would the anti-proteolytic substance in king-snake serum inhibit these harmful effects—a couple of examples:

There is a bleeding disease of pregnant women at term with the jaw-breaking name of Afibrinogenemia—broken down it means: no-fibrin-in-the-blood. For some obscure reason these women have a destruction and absence of fibrinogen in their blood. They have no fibrin to form a clot so their blood

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has no clotting ability and they can and do bleed to death. At the present time the only treatment is the use of replacement with human fibrinogen and massive transfusions of whole blood. Query: Could this destruction of fibrinogen—a pure protein—be due to some proteolytic enzyme and, if so, could this proteolytic enzyme be inhibited by the substance in king-snake serum?

Also: What causes peptic ulcers? What causes a cancer to displace and destroy normal human tissues next to it in the body? How do bacteria digest human cells?

After all, tissue is protein; protein is destroyed; and protein destruction is proteolysis by definition.

Would "X" substance in king snake serum have any inhibitory effect on this proteolysis as it did on the proteolysis of the gelatin layer on Kodak film?

How about some biochemist separating the fraction of king-snake serum containing this "Anti-protease," purifying it and then synthesizing it—a quantity would be needed first of all before any large scale tests could be carried out.

From the king snake's natural immunity, that has been known in folklore for many years, might come some new medical discoveries. Other important medical discoveries have had humble beginnings and even the lowly snake might provide us with some answers to medical problems.

Picture Aesculapius, the father of medicine—the Greek physician symbolizing the healing arts throughout the ages—as the kindly, white bearded old gentleman makes his rounds of his patients. His faltering steps aided by the grip of his gnarled hand clutching his ever-present staff—this staff with the entwined snake that has been the symbol of medicine.

Picture the irony of it all if the answer to the great problems of medicine has lain just beneath his fingertips all these years while scientists have searched the world over for the answers to great and important problems . . . the solution lying just inches away from his grasp . . . in the body of the snake.

Venoms: Publication No. 44 of the American Association for the Advancement of Science, 1956

ANTIVENIN: Pamphlet published by Wyeth Laboratories, Division American Home Products Corp., New York, 1961 (Also contains an extensive Bibliography)

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THE MISCHIEF MAKER

RICHARD OLIN

One weapon you absolutely can not fight is the weapon whose existence you rigidly refuse to acknowledge.

Interim Report to the President by his Standing Wartime Advisory Council—March 26, 1970.
Subject: The True Cause of World War III, now Known as "The War of Professor Colley."

Mr. President:

In the midst of a global conflict that has been replete with irony, it has become the ironic duty of this committee to inform you that Project Mistral has at last been brought to conclusion. We now know, as we grind into the fifth year of this ghastly engagement, the series of events which culminated on January 1, 1966 when a Professor Emeritus of History, Thomas Greenbriar Colley, chose to declare war on our Nation and on the human race.

The letters and documents transcribed below are the body of this report. These papers tell their story all too plainly. Therefore, it was the unanimous decision of this body not to condense or attempt to synopsize their contents. Instead, the pertinent parts of each has been placed below in extract. Each excerpt appears in its chronological order.

The committee wishes to call your attention in passing, Mr. President, to the valor and gallantry displayed under fire by Archives Research Team 7. Despite repeated vermin-assaults of unparalleled and almost unbelievable intensity, Team AR-7 pressed through to its objective—the file rooms of the now defunct Central Intelligence Agency. Under the command of Israeli Captain Aram Roshana, the five men and three women librari-

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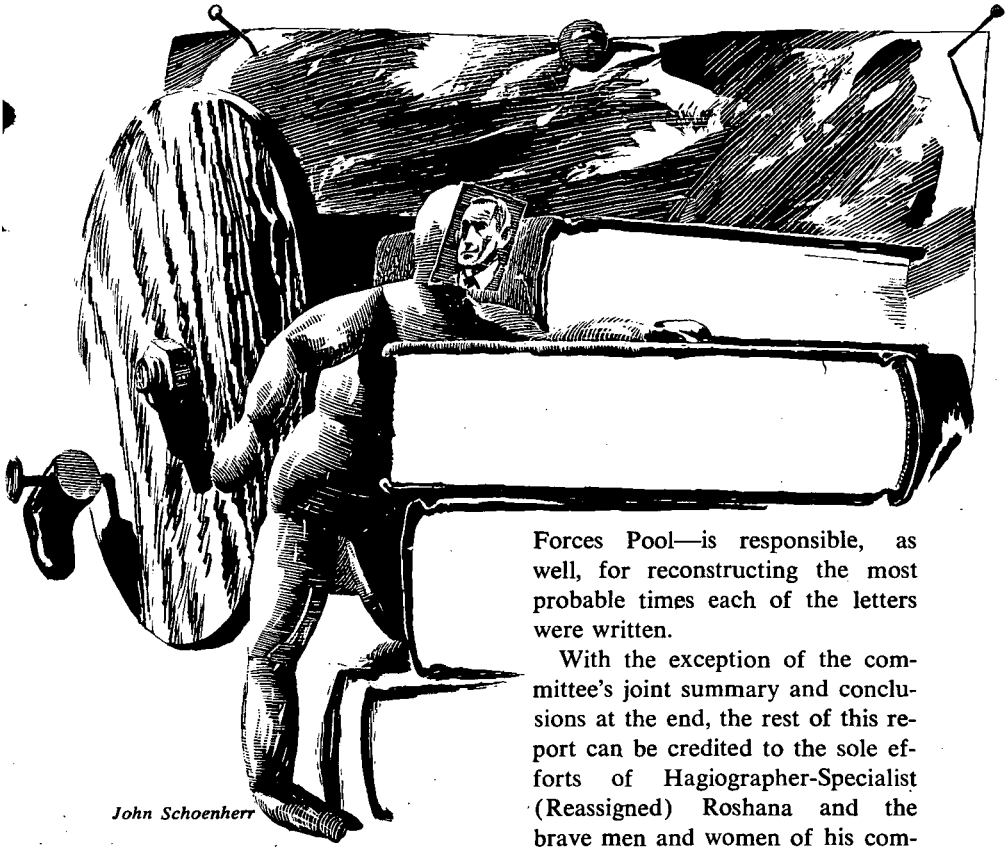

John Schoenherr

ans of AT-Pac's AR-7 endured unimaginable torment to retrieve Colley's notes and his correspondence with the C.I.A. Had they not made their brave sacrifice on the untenanted and unendurable streets of our nation's former capital, it is safe to say that this project would never have seen completion.

Captain Aram Roshana—on loan to us through UN Special Forces Pool—is responsible, as well, for reconstructing the most probable times each of the letters were written.

With the exception of the committee's joint summary and conclusions at the end, the rest of this report can be credited to the sole efforts of Hagiographer-Specialist (Reassigned) Roshana and the brave men and women of his command—who gave to him and our country their most devoted and unstinting efforts.

(From Captain Roshana's preliminary remarks.)

Mr. President:

The following material was found in the declassified portion of the C.I.A. file on Professor Thomas G. Colley, Ph.D. Colley was a historian, math hobbyist, and holder

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of the chair of history at a North American university—whose name and location were still classified at the time this file was collected.

Our research failed in its most important task: to uncover the secret part of the Colley file. It was burned, along with all other classified material, by government workers who acted in a last-ditch attempt to preserve security the night Washington fell to the enemy.

I can only say that, whatever official ordered the secret file destroyed, he acted with an astounding lack of judgment. The effects of Colley's baffling weapons series are so radically divergent, and yet so thoroughly devastating, from those of conventional war that even after five years of feeling those effects firsthand we still do not know how they are produced. We now know the theoretical base and blueprints for the professor's armament were contained in the secret file.

To burn it was monumentally harebrained. At best, it stopped Colley rereading some of his old letters. It lost us the best opportunity we have yet had to end this terrible war.

Until the last months of 1965, Professor Colley was known only to a few of his fellow specialists in the field of medieval history. While there can be no question as to Colley's intelligence, his behavior was contradictory and even—on occasion—deliberately perverse. He loved to argue, on any subject, and at almost any time. He was locally famous for having once conducted a dozen simultaneous debates between himself, his students, and several members of the faculty. His motive appears to have been simple enjoyment. Since he waged his arguments much as a chess master plays off a dozen concurrent games, he was credited with winning almost all of them.

He was not popular at his university.

His friends knew him as a man who relished speculation, courted new ideas on any subject, and who was overjoyed whenever they called his attention to a puzzle or an enigma from any particular field of knowledge. In contrast to his broad personal interests, his public life was devoted to an intricate and completely obscure historic specialty. He received the Spengler-Ditty award for a monograph on his special subject: "Medieval Superstitions Common to Europe from the Eleventh to Fourteenth Centuries."

To his credit, not even the severest of the professor's critics ever accused him of falling back on his status as an acknowledged authority, or department head, to win an argument.

The males of Colley's family were noted for their bad temper, longevity, and a physical and mental vigor which lasted up to the last days of their lives. They have commonly died in their late nineties, frequently by accident or violence,

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but most often they succumbed to apoplexy.

Several of Colley's ancestors have achieved notoriety. A great grand uncle, who conducted Union privateering actions in the War of Rebellion, won a historic footnote —not unsurprisingly—by continuing his own private war on British shipping long after Cornwallis surrendered to Washington. When finally caught by Union warships his defense was highly original. He contended that the terms of peace had been bungled by the Continental Congress and recommended that America capitalize on her victory by immediately occupying Great Britain. Though hanged for piracy, several historical societies tried to rehabilitate him after the War of 1812.

The quiet, academic life of the modern Professor Colley is vividly pictured in the following letter:

Extract One. "I have managed to engineer a running battle with the neighbors who live directly behind me. Our debate centers on the correct position of my backyard fence. I don't give two hoots for the two-inch strip of soil we are contesting, but I get plenty of good, healthful exercise from my frequent dashes out of doors.

"That, and the necessity of bellowing insults from my yard to theirs, will add—I cheerfully expect—at least an extra inch to my chest."

Professor Colley's attitudes can only be described as curious. In the next extract he describes an experiment performed by his nephew who used circuitry adopted from a pseudo-scientific device known as a "Hieronymus machine."

Extract Two. "Don't ask *me* why it works. It's almost enough to make me a disciple of Hume. That philosophical gadfly of the last century was never more happy than when he could sink his stinger into our concepts of cause and effect. Perhaps he was right.

"How do we *know* that any one specific thing causes an event? Ultimately, it may prove that only events themselves are 'real,' and what we call 'cause and effect' exists only as a convenient mental fiction.

"What Randy (the nephew-Capt. R.) did convinced me that the question is, at the least, still open. He has set up at one end of his circuit something he calls a 'receiver plate.' At the other end, his wiring leads connect to a photograph of his high school principal. There is no power source and no current running through the circuit. Randy assures me that this is standard operational practice. In fact, most of his circuitry is nonconducting.

"Last week, we placed a quantity of strawberries in the receiver plate. Strawberries are one of the many things to which the principal is strongly allergic. This week, the principal has not been to school.

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He is home with one of the most virulent cases of hives that his doctor can remember.

"Coincidence? Most likely. But since Randy has hit on such an excellent and quick means of detecting a 'Hieronymus effect,' it would be silly to waste it.

"Strictly in the interests of science, I've helped him stock a large supply of cat fur, mocha chocolate, unbleached wool, several dyes and, of course, more strawberries. They are all substances which make the poor man's skin go bumpy. Randy is keeping a log-sheet. He will make the first in our series of test runs as soon as his principal has enough clear skin to show a good positive reaction.

"If we score direct hits on each test, then I think we can legitimately discount coincidence. Time will tell.

"Though he comes from the distaff side of our family, Randy shows every indication he is a true Colley. Meanwhile, I have given him several books to read. The first is Lewis' 'Symbolic Logic,' and the second is my copy of 'The Collected Spells of the Sorcerers.' I hope they each may be of some help."

The next letter—composed, we believe, the last week of April—was written by the professor under great pressure. Both its contents and the deep indentations, caused by his unconsciously bearing down with his pen, support this conclusion. It was sent to Charles L. Gordon, another historian and life-long friend of Colley. The letter was recovered by Federal agents two weeks after the professor's final escape.

Extract Three. "Charlie, I am a very disturbed man. I need your help.

"I have just written I don't know how many letters to Washington. They should be plastered all over the capital by tomorrow evening. I broke my own most sacred rule and tacked a big, black Ph.D. to my signature. It may cause some letter to be read twice, or at least once, before it is dropped into the eternal darkness of a government file. But I do not have much hope. So, Charlie, whatever contacts you may still have from the time you worked in Washington, now is the time to use them.

"A strong burden of evidence has convinced me that we stand on the eve of World War III. It is only months away. Sometime before those months have passed, we must find a way to make nuclear arms as obsolete as Medieval body armor. It is imperative for the sake of victory, let alone humanitarian considerations, that the next war *not* be fought with thermonuclear weapons.

"We must duplicate the ingenuity of Barthold Schwartz." (This refers to the inventor who, in the Middle Ages, gave commoners their first chance to withstand a

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feudal knight; he invented gunpowder.—Capt. R.)

"First, of course, comes the question of time. I believe I have stumbled on what may be the time schedule for this century's global wars. It is not mine, but Oswald Spengler's. I stumbled on it for the first time just yesterday.

"You will find the timetable in Dr. Stanley Lovell's excellent account of his wartime service with the O.S.S. He interviewed Spengler at the philosopher's huge apartment on the bank of the Green Isar River, Munich, in 1934. You owe it to yourself to read Lovell's book, 'Of Spies & Stratagems,' if only to understand the absolute havoc that brilliant, unorthodox thinking can work on an orthodox war machine.

"To begin, Spengler drew on past history to show that world wars are not novel or unknown outside the Twentieth Century. Three periods in the past witnessed them: the ancient Egyptian wars between the Upper and Lower Nile, the wars in China between the Five Contending States, and the Punic Wars between Rome and Carthage. Each ended with a third and final war.

"Spengler then predicted that World War II would begin in 1939—five years before the fact!—and that the last war would start in 1964. His method was simplicity itself. He merely added twenty-five years, the time needed to produce another generation that had not seen war firsthand, to the year the last war began.

"To save you some pencil work, Charlie, the actual predicted date for World War III to commence was October, 1964. As it happens, that was the month Nikita Khrushchev was deposed and, on October 15th, the Red Chinese detonated their first nuclear device.

"The inferences that can be drawn at this point are both obvious and chilling. I prefer to think, however, that the bomb in our basement has not yet been armed, nor is it now ticking. What Spengler obviously meant was an all-out military engagement. In our time, that can only mean the time when we will all have intercontinental missiles bouncing off our skulls. To interpret him in any other way takes his statement completely out of context.

"As one might expect of the author of 'Decline of the West,' and the man who was, simultaneously, head of both Mathematics and History at the University of Munich, his reasoning seemed flawless. I could only assume that some later factor had entered his timetable and thrown it off. To give credit to the man's mental acuteness, the factor would have to have been nonexistent in 1934 and something Spengler could not be expected to foretell.

"If the man had any particular flaw, it was the one common to all Germans—their inestimable opti-

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mism over the fortunes of their nation. What Spengler could not suspect was that post-war Germany would be split, and his timetable would be delayed because the third war could not begin in Europe!

"Now America had twenty-seven years of peace between the first and second of her wars, which makes 1968 the interesting candidate for target year. Quite interesting—since it is both an American election year and the earliest time we may expect (so far as I know) a deliverable Chinese H-bomb.

"But we had best stay with Spengler's quantity of twenty-five years, and add it this time to the year America entered her last war. In each previous war, it took two extra years to drag a neutral and reluctant America into the fight. If there is a third war we can't assume its combatants will be any more able to withstand the pressure to fight than were the nations of Europe. And 1940 would mark the logical start for the thermonuclear stopwatch we have been discussing, since Russia by then had embarked on the military campaign of the Russo-Finnish war.

"Spengler's amount, added to 1940-1941, gives the time span from December 1965 to January 1967 as the most probable period for the start of a global, thermonuclear war.

"So much for the logical base of the timetable. While you re-check it, I shall sharpen some more pencils and brew another pot of coffee. In essence, it is nothing but Spengler's prediction slightly hashed over.

"The next question to ask is obvious. What will the next war cost, and who—if anyone—will win it?

"I would like to call your attention to one salient point: the casualty rate tripled from the first to the second world war. World War I killed ten million human beings—roughly .6 of one per cent of the world's population. World War II killed 38 million, or 1.7 per cent of the humans then alive on the globe. Another tripling is the least increase that we may expect, and that will cost us 5 + per cent of the current world population. Or put another way, a minimum of 200 million people will die.

"In World War I, 85 per cent of the casualties were soldiers. But all the armed men in the world could not fill the last casualty figure. If the next war is fought, then it must inevitably become a holocaust, and it will be stoked with the bodies of women and children.

"(Perhaps I should have warned you, Charles. You can expect this section of my letter to be as distasteful as any other autopsy. If it helps, we are not yet performing the operation in fact—just on paper.)

"The next part of the question was 'who—if anyone—can expect victory?' To help answer that I have appended the following set of

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figures. You might call it the box-score of a hypothetical playoff between Russia, China, and the United States. My base figure of one hundred million is used only for comparison. I got it from the recent press conference of Secretary Robert McNamara; he gave it as the number of Russians who would die after America suffered a full-scale attack."

U.S.S.R.—minus 100 million and a certain 80 per cent of her industry: a third of her population would be dead, another third disabled; she would be left with a surviving third of her population and a shattered remnant of her industry to run—if able—a country approximately three times the size of Europe.

U.S.A.—minus 100 million of her population and probably 90 per cent of her industry: 60 per cent dead, the great remainder disabled.

Mainland China—minus 100 million and 100 per cent of her industry: one seventh of her population dead, a presumed fifth disabled; she would be left as strong, numerically, at the close of the war as Russia was at the beginning, and she would be more than capable of expansion into a shattered Asia and Japan where standing industrial plants would allow her to retool.

"After World War III, China may emerge to take the role of ruler of the world, through simple default. The position will be as unenviable an occupation as was ever filled. At the end of World War II, America used her wealth to completely rebuild Europe. Only an incredibly productive nation could have done it, but America deserves no credit for charity. Had Europe remained a smoking ruin it would have meant world-wide collapse. And America knew it.

"After a war fought with even the limited use of thermonuclear weapons, 'victory' will be phantasmagorical and the values we hope to uphold—liberty, justice, equality—will have as much hope to survive as seedling onions planted on the Sahara.

"Alternatively, Charlie, there is always the possibility that the nuclear nations will detonate every megaton in their stockpiles—the equivalent of thirty-five tons of high explosive for every man, woman, and child alive on the Earth today. D.O.E. is the term the military use. It means 'death of Earth,' and, since it would mean the 100 per cent kill of all organisms above the complexity of a radish, it could be counted on to solve all our problems—for at least the next billion years.

"One thing grows obvious, Charles. Since 1948 we have not had a defensive weapon, but a suicide pact. That the option rests with whichever member decides he first wishes to press the trigger is an added disadvantage. Parenthetically, I should sometime like to meet the military genius who settled on

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atomic arms as the best available weapon. It is rare one can talk to a man whose skull contains nothing but cooked cauliflower.

"However, the last advertised 'ultimate weapon' was the arquebus of the Middle Ages. And in all my reading I have yet to encounter a war that the scholars agree was predestined. So I am now asking you for your help, Charlie.

"We are going to derail it. Or failing that, we are going to set it rolling along another track.

"First, get a death lock on every Washington official you know. Give them the timetable. If they are dubious, quote Spengler: 'Always they will say conditions have changed; new weapons are available; it will never take place, but it will . . .' I also suggest that you relay this summary to any Russians you happen to know. I'm sure they know the facts, but someone might benefit from the reminder.

"Second, I wish to speak to someone at the C.I.A. The resemblance to their parent organization, Lovell's O.S.S., is vague, but they must still have a 'Department of Dirty Tricks' left around somewhere.

"Third and last. I wish to God, and the wish is fervent, that I knew something about science. I simply can't check out a raft of books from the University library and have no covering excuse. Charles, could your excellent and close-mouthed secretary purchase the following list of books? You know where they may be found, and she—"

(The rest of the letter was removed by a pair of censor's shears. We believe it joined the other items in the missing secret file.—Capt. R.)

We believe the next letter written is Colley's account of an interview with some government official. Neither the man nor his agency can be positively identified. All identifying references have been removed.

Extract Four. "I did *not* kick the young whelp down the stairs! Whoever your informant is, his report is not only false, he himself is absurd!

"They sent us an errand boy, but I treated him with the utmost courtesy. And I treated him that way from the moment he appeared at my door to the last moment, or almost the last moment, before he withdrew.

"If he can't sit down, it's his own fault. I never bodily touched him.

"To begin with, I showed him our model of the Russian sea tug, *Nashya*. We have it placed in a bowl of water with wire leads connected to Randy's expanded version of a Hieronymus circuit. I next showed him the newspaper clippings I mailed to you. During the last heat increment to our diplomatic negotiations, the newspapers reported the *Nashya* was laid-to off King's Point. A straight line

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drawn inland from King's Point just happens to intersect the corners of two SAC bases, one command radio station and an arsenal. I leave you to draw your own conclusions about missile triangulation, but if you don't believe me just refer to the map I sent you.

"Since we are still raw experimenters, Randy and I had also hooked a few other items into the circuit. One was an electric fan which agitated the water in the bowl, and the other—at what should, I suppose, be called the 'input' part of the circuit—I had tied (solely for purposes of the experiment) a rope that I'd braided in what were once called the 'sorcerer's knots' or 'storm knots.' Many a magician of the Middle Ages kept himself fed by selling them to sea captains. To operate one is simple. Untying one knot gives a breeze, another a wind, and so on up to a full-strength gale. Or at least that was the superstition.

"I never got a chance to give him the last newspaper clipping. (The *Nashya* has been bothered by 60-mile-per-hour winds for the last three days.) I had no more than finished the explanation of our circuitry layout, when the young twerp burst out laughing!

"I showed him courteously to the door, and that was the end of our interview. I have always disliked one certain type of student. They all have what I, in my bias, call the 'Groton-Harvard patina'—by which I mean nothing more than the unmistakable evidence that an expensive education has been lavished on an undernourished mind.

"Believe me, Charles, I never touched him. My punctilios could not have been more finicky, nor my parlance more piddlingly polite. As it turned out, Randy had taken his photo with a minicamera. We developed the picture and glued it to a man-shaped miniature, which we then set in front of a clockwork wheel that delivers a miniature boot to the miniature seat of the pants every ten seconds.

"And if the young gentleman is now lame, he has no one to blame but himself. Also I categorically refuse to stop an experiment and change our circuitry when a test is no more than half completed. How can we ever learn anything that way?

"I still need your help. More badly than ever since time is running out. Get me in touch with something other than an ivy-eared cretin! Randy and I are proceeding on a wide range of experiments. Something valuable may turn up, and anything hopeful at this stage is desperately needed."

Extract Five. "My congratulations, Charles. I don't know what governmental nerve you touched, but it produced an undeniable reaction.

"Randy and I are now under

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house-arrest. Since this may be intercepted, I won't tell you how I smuggled this message out or who relayed it to you. But, if you read this, you can be assured that more of my brief notes will reach you. I wouldn't dream of breaking off our correspondence at this point.

"The experiments still continue. Officially, we are just being put through an 'intensive security investigation,' which means that we are watched, an agent now occupies the spare room next to the kitchen, and we have been asked—quite politely—not to leave the premises. All our circuits are elsewhere being examined, of course, and no breadboards or copper wire are left in the house. We've found it easy to make do with other items, however."

Extract Six. "We are at last on the right track! I can see, now, why magic was such a chancy business. In fact, it must have resembled the state of medicine up until the invention of sulfa. Ages-long accumulation of folk knowledge—which is the sturdiest form of pragmatism I know—but no real understanding, let alone the underpining of a basic, general theory.

"If you think I am about to waste valuable space outlining weeks of work on this tissue napkin, you are wrong, Charlie. But I suggest you reread certain sections of Lewis. Especially his chapters on truth-value systems and on the modal functions. After considering these, take—"

(The remainder was cut.—Capt. R.)

Extract Seven. "We are out. Randy and I have escaped. It was so easy I'm surprised that I didn't think of it a month ago.

"Perhaps the delay was just as well. I needed time to think. We have our freedom, and I feel confident we will stay free because the india ink schematics in my briefcase contain a formidable power—perhaps the greatest power the world may ever see.

"The question is, how do we use it?

"Since I am now no longer obliged to write to you on my morning breakfast napkin, I shall use this luxurious writing space to give you a copy of each schematic."

(Lost.—Capt. R.)

"The first device works, I think, on the principle of photon loss. Practically, it gives a mirror image of any object or person no matter where they may be. It's ideal for detecting troop movements or missiles even in flight. Since I've no idea what its operational range may be—or even if it has an upper range—I nicknamed it the 'Mage's Mirror.' "

(No copy remains.—Capt. R.)

"Speaking of missiles, I must call your attention to the next device, for which Randy can take full credit. He hasn't named it yet, but it

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works on the principle he has termed: 'the more complicated the works are, the more likely some little thing will go *blong,* especially when it's helped.' It works beautifully at jamming fuel systems, confusing tracking stations, and bollixing in-flight guidance controls."

(Missing.—Capt. R.)

"Among the anti-personnel items, we have methods for doing everything from stalling trucks to exploding rifle cartridges while they are still in their bandolier or loose in a hip pocket."

(Same.—Capt. R.)

"For generals, local dignitaries, or regional potentates we have what Randy calls the instant 'voodoo kit.' "

(No comment seems necessary. —Capt. R.)

"And then there is our major weapon, the just-general-bad-luck-machine. Guaranteed to produce an astoundingly high level of misery within any locale on which it is trained."

(This is too painful to continue, Mr. President. Please refer to the attached list of further weapons stapled to the back of this report.—Capt. R.)

"While we have the power to act, I am not at all sure we have the wisdom to act correctly. Charles, you know as well as anyone why I have acted. You know what I hoped to prevent. What do you think is the wisest course I can now follow? And don't say something so silly as, 'Give yourself up; a government is the best organization to handle this.'

"I think that philosophy is a major cause for our dilemma. Too many trained minds, scientists and others, have already shuttled the products of their thought into the waiting hand of a government administrator. What is it that makes a keen mind, honed by a good education, turn itself off when it turns from a problem in, say, mathematics to a problem labeled 'politics?' Is it modesty, or an alibi? An honest doubt of one's competence in an unfamiliar field—or an exit, by a complex rationalization, so one can duck out the back door on his human responsibility?

"I'm not sure just yet what course I'll take. But I have the glimmerings for a beginning. The first week of our imprisonment, I got into the most stimulating argument with the agent who was assigned to watch us.

"I gave him the same objections I gave you on nuclear armaments being our best choice going for a weapon. He came back with the question: 'What would *you* suggest?' "

"I answered: 'The best weapon man has ever had, young man, is thought. So I would think. And I would follow the most original path my thoughts could direct.'

"He immediately demanded I supply him with some practical example, which I did. I said, 'If nothing else presented itself, and I am

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sure that something would, I would resort to judicious assassination. Just as an example, I would find a means to kill Mao Tse Tung—and leave incontrovertible evidence that he died at the hands of a Soviet agent.' (And, I might add, I would far rather resort to individual murder, Charlie, than face the mass deaths an honorable observance of political conventions could well cause.)

"He turned a mild sea-green and asked to be excused a moment or so later. But I think the principle that I hit upon unconsciously might be the best one.

"I can not face inactivity when I can act. I can not take the chance that the third and final war—with its resulting dark ages—will not be fought. So I will fight it.

"But this time there will be a difference.

"I do not intend to take a single human life. But, more importantly, I intend to reverse the normal course of all the wars that have ever, up until now, been fought. Governments everywhere are built like pyramids. And up until now the top points of those pyramids have been the last in war to feel the pressure.

"I intend, and I have the means to make good on the intention, to invert every such pyramid. I am going to replace the front-line soldier with all the world's leaders. Nor do I expect to accept any surrenders. The only way they will be able to stop me is to beat me. And they will only beat me by discovering, independently, how I am fighting them. Once they have done that, then the war I sought to avert will no longer be possible.

"Good-by, Charles. You've been an excellent friend, and I thank you for your help."

Joint Summary and Recommendations.

Mr. President:

In light of the contents of this report, this committee can only respectfully submit that the five-year long debate on strategy has come to an end.

Obviously, Professor Colley intends to pursue the course he has outlined until his last day. Nor will his death from old age end the rigors of this conflict, since we expect his nephew to carry on the fight.

Therefore, we feel there can no longer be profit in the long drawn-out debates between the two factions known popularly as "Warriors" and "Warlocks." Colley, himself, has decided the issue in favor of the "Warlocks."

We strongly recommend that all lines of research and development be turned to fully develop the lines of Colley's work. We also commisserate with you, Mr. President, on the continuing discomforts of your post. It is possible that another five years of intensive research will at last allow us to close the technical and theoretical gap. ■

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Part II of III.

An assassin on assignment doesn't ordinarily get mixed up in a strictly crooked pioneering swindle. It's not his type of crime. But this assassin was an unordinary type anyway, and his assignment even less ordinary; he didn't know his victim's identity!

SPACE PIONEER

MACK REYNOLDS

Synopsis

A mysterious stranger approaches the Spaceship Titov *which is loading passengers and freight for the colonization of the recently discovered planet New Arizona. He is seeking a person named Peshkopi but is circumspect. In his attempt to get aboard he makes acquaintance with hard-drinking JEFF FERGUSON the* Titov's *First Engineer, gets him tight and in the guise of bringing Jeff back to his quarters, gets past the ship's guards.*

He awakens in the morning with a hang-over and the realization that he fell asleep in Jeff's cabin and is now spaceborne—a stowaway. He stumbles upon the fact that a member of the Titov's *company at the last moment turned funker and remained behind. He takes over the identity of ROGER BOCK, a holder of one share of the ten-share New Arizona Company, organized to exploit the new planet.*

LESLIE DARLEEN a hedonistic cynic inadvertently fills the new Rog in on some of the colonization plans, and reveals that the ship is unspaceworthy, the officers and crew, riff-raff and opportunists.

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Rog cautiously feels his way, meeting the other members of the Company including RICHARD FODOR, CURRO ZORILLA, a huge brute of a man, PATER WILLIAM, a United Temple monk, BRUNO GLUCK, the ship's domineering skipper, and CATHERINE BERGMAN, who it turns out actually represents the two thousand colonists in the dormitories who have bought one seat on the Company board in hopes of lessening their exploitation.

Rog finds the New Arizona Company was organized by MATTHEW HUNT who retained two shares of the Company for himself. He had discovered the astonishingly Earth type planet through accident on a yachting cruise. By Earth law, the planet is his if he can settle two thousand colonists, with adequate equipment, upon it within five years of discovery. Hunt himself is not aboard and Captain Gluck has taken over the chairmanship in his absence. Gluck and his officers, who own the Titov, *have been given two shares in return for its use.*

Returning to his cabin, Rog is attacked by an unknown assailant who escapes. He finds his appropriated things have been ransacked, but can find nothing missing. He suspects momentarily that his enemy, Peshkopi, has caught onto the fact that Rog is after him, but then realizes that is impossible. Peshkopi doesn't even know of his existence.

Still seeking Peshkopi, whose very name moves him to red hate, Rog discovers through Cathy Bergman that his enemy is not among the passengers. He is momentarily dismayed, realizing that perhaps Peshkopi is a woman, in which case her last name might now be her husband's. However, he discovers there are twelve new crewmen aboard and decides to get Jeff drunk and question him.

Before he can do so, he goes with the captain, Cathy and Jeff to the colonist dormitories to investigate their complaints. He is horrified by the conditions under which the colonists must live. They have named a committee which demands more space and hospital facilities. During this meeting, a berserk colonist, mad with space flap, attacks the captain and in defending Gluck, Rog, using his karate training, kills the man.

Later Rog gets Jeff Ferguson into his cabin, primes him with liquor and asks him about a Peshkopi among the crew members. Jeff denies there is such a person. Rog is upset, fearing that his quarry has somehow failed to embark on the Titov *in spite of the definite information Rog had received.*

Hardly has Jeff left than Curro Zorilla turns up. He reveals that the board members of the Company are beginning to conflict in their interests. He wants to control more than one vote when it comes to deciding just who gets various con-

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Kelly Freas

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cessions. In short, he wants to vote Rog Bock's Company share. When Rog demurs, Zorilla brings from his wallet a quarantine clearance with a picture of the true Roger Bock upon it. Zorilla knows the present Bock as an impostor and threatens to expose him if he does not vote as Zorilla dictates. It was he who had searched the cabin and assaulted Rog.

Part 2
V

For the next forty-eight hours, Rog Bock remained a celebrity in officer's country. By nature retiring, he hadn't made much of an impression on his companions until this point. Not when his competition included the loquacious Leslie Darleen, the attractive Cathy Bergman, the heavily sinister Curro Zorilla and the dominating Captain Bruno Gluck.

Now Chief Engineer Thor Kaivokatu, Second Officer Roy MacDonald and Second Engineer Manuel Sanches made a point to become acquainted. They seemed all from the same mold as that of the captain, an arrogant military quality predominating over that of the civilian officer of a tramp spacefreighter. But that was what Ferguson had said, none of them were merchant-ship officers by background.

The first time he had sat alone with Leslie Darleen that seeker of clay feet had eyed him ruefully. "So," he said in deprecation, "we have a hero in our midst."

Rog protested, all over again. "Hardly. That poor cloddy should never have been allowed aboard a spacecraft. The argument got a little tense and something snapped and he made a rush for the skipper. In the scramble, I must have done something that led to his death. I'm sorry, of course. I'm no hero."

Leslie said disparagingly, "My dear Rog, it's a flat's game, running down heroes—even if you're the hero. It'll never get you any place. People want heroes. They serve some need or other. Don't ask me what."

Rog shrugged, wishing to get off the subject of himself and in an attempt at humor said, "You seem to be quite a deflater of heroes yourself. What's so bad about sneering at heroes?"

The foppish hedonist put a dramatic hand to his chest, as though appalled at the other's ignorance. "Tragedy can ensue," he insisted. "Have you ever heard of the novelist, Hemingway?"

Rog said, "Early Twentieth Century. Wrote about bulls or something, didn't he?"

"Sometimes," Leslie said wryly. "However, I was thinking about a time he wrote about generals. A man who had seen quite a bit of war himself, he revealed that he didn't think much of Generals Patton, Montgomery and Eisenhower,

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three of the heroes of the Second War. He thought them military secondraters—for different reasons—and so wrote. But you simply couldn't *say* things like that and his book got the biggest panning of his career. In fact, it probably embittered him to the point where he never wrote really sincerely again, although they gave him one of the top literary prizes for a thing that was notable for the fact that it stepped on *nobody's* toes."

Rog had been only half listening to Leslie's patter, his mind still on the man he had killed. He said soberly, unable to leave the subject alone, "A pioneer going to a new frontier. He might have wound up one of the greats in the opening up of New Arizona. He might have been a new Fremont, a new Custer, or perhaps only a Buffalo Bill. But instead, he's dead."

The other looked at him thoughtfully, then evidently decided to keep the light approach. Leslie said, "My dear Rog, you pick the poorest examples—always assuming there are good ones. You'll simply have to get over your romantic ideas about pioneers and frontiersmen. Few heroes of the American frontier bear much scrutiny and I suspect that it applies to just about all frontiers. Your Fremont, the Great Pathfinder, didn't find his own way through the Rockies and to the West Coast but hired old mountain men such as Kit Carson to lead him along paths they'd found long years earlier. Buffalo Bill Cody was one tenth frontiersman to nine tenths showman and press agent's dream. Custer, the great Indian fighter? His big victory was descending without warning on a Cheyenne village in the dead of winter and, when the highly outnumbered warriors had retreated into the hills, burning the tents and killing the women and children. His greatest claim for fame was one of the most asinine defeats in history."

Leslie Darleen was on his favorite subject and now fully underway. "The Indian fighters' farce probably reached its peak at the very end when Geronimo and his Apaches would go out on a raid in the southwest at the end of the Nineteenth Century. His group of half-naked savages, on foot, armed with rifles, would number a hundred or less, including a few women to do the work. The rest of the Apaches stayed on the reservations where the eating was better. Opposed to Geronimo would be thousands, even tens of thousands, of professional troops, largely cavalry, armed with the latest equipment including Gatling guns.

"But how are these Indian campaigns depicted on our Tri-D shows? As thousands of mounted Indians furiously dashing about a handful of staunch cavalrymen who knock them off like clay pigeons with six-shooters that seemingly hold sixty rounds apiece.

"By the way, you know that old

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Tri-D wheeze where the brave pioneers make a circle of their wagon train and fight off the redskins who ride round and round, providing a perfect shooting gallery? Well, it's been impossible to authenticate a single incident where that ever happened. Obviously, the Indians were guerrillas, they didn't believe in getting killed in their actions; that wasn't the way they fought their wars. Theirs was the hit and run tactic. At long last they were swamped by numbers, not by heroism on the part of the ragtail frontiersmen who engulfed them."

A new voice said, "Am I intruding?"

Rog Bock scrambled to his feet.

Leslie said wryly, "Sit down, Cathy. I was just dissecting heroes, which might be on the unworthy side in view of the fact that our Rog, here, seems to have saved us all by rescuing the only competent deck officer on the ship."

Cathy took one of the chairs at the small lounge table. She looked at Rog Bock and nodded. "Under the circumstances, it can be necessary to . . . to kill a man to preserve the community as a whole. There is no ill feeling against you among the colonists."

He was embarrassed. "Well, I'm glad," he said. He sat down again, feeling his response had been inadequate, but at a loss to say more.

She looked at him thoughtfully, finally saying, "You are obviously quite different from what you appear to be."

Leslie said lightly, "I deduce that you didn't join us, my dear Cathy, for the purpose of easing whatever guilt pangs our Rog might be feeling."

She turned her large dark eyes to him. "No," she said. "I didn't. I came to talk about the colonists. We colonists."

Leslie smiled slowly at her. "Does that *we* include Rog and me, or only you and your constituents?"

"That's what I wanted to find out."

"Well, let's hear your fling, my dear. I confess to mystification."

Cathy looked from one of them to the other, fine wrinkles on her high forehead. "The question is, did you come to New Arizona to be colonists, opening up a new planet, or did you come merely to milk it of its wealth in as short a period as possible?"

Leslie said, mockingly, "Are they mutually exclusive?"

She didn't answer directly. She said, "There are over two thousand earnest, ambitious, healthy, hard working . . ."

"I doubt it," Leslie murmured softly.

". . . Men and women who joined this expedition because they were promised a new world to make their own. They saw themselves becoming successful farmers, ranchers, perhaps miners, some of them merchants, some eventually

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manufacturers, professionals, some, I suppose, artists."

Leslie's face had gone into his overly done cynicism. But Rog was scowling, not finding her point as yet.

She went on, very earnestly, "All of them were promised the chance to grow with this new world."

"Well . . ." Rog said, impatiently.

Her eyes looked at him pleadingly. "They have the *dream*. The dream of new frontiers to be conquered that has driven man since first he became man."

"Zen!" Leslie laughed. "The *Titov* is simply plagued with poets!"

"It's not funny, Leslie! If the captain's schemes go through, they will have all been betrayed."

"Well, now we're getting somewhere. What schemes?"

"You know very well!"

"If he does, I don't," Rog told her.

She evidently found it hard to believe. "I thought I was the only one being kept in the dark. The impression I got was that this was all planned by Matthew Hunt and the board—except for me—before the *Titov* ever burned off."

Leslie twisted his mouth. "Let's hear your version, Cathy."

"All right. I've gleaned this over the past few days. Matthew Hunt had to have at least two thousand colonists in order to finalize his claim to New Arizona. But he actually needed a comparative handful of technicians, engineers and so forth. Because what he actually had in mind is draining New Arizona of all its resources in a matter of a decade or even less. He plans to sell concessions to the largest corporations on Earth and throughout United Planets. Through such exploitation the petroleum products, for instance, can be wastefully pumped away in a matter of a few years. Gold, radioactive elements, silver, tin, all the valuable minerals can be located and scoop-mined in little more time. Monster automated factories can be set up to convert the celluloses into transportable commodities and denude the planet of its forests."

Leslie said, "It makes a beautiful picture. A nineteenth category planet must have literally billions in basic exchange values tied up in raw materials. Somebody is going to get *awfully* rich, Cathy, my dear. Why not us?"

"Now it's my turn to ask. Who do you mean by *us?*"

His grin was cynical. "Why, we members of the New Arizona Company. We who own New Arizona."

Her glare was bleak. "I am one of the colonists, Citizen Darleen."

"My dear Cathy. It isn't my business just how you managed to wind up on the board, but the fact remains that it is *you* who are a member, not those two thousand yokes in the dormitory compartments. They're simply cloddies to be dealt with as cloddies. String

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along with the captain and the rest of us and you, too, will wind up with one of the greatest fortunes in United Planets."

"And what will happen to the colonists who trusted me, Citizen Darleen?"

"I suppose they'll remain on New Arizona making their own way as best their abilities permit."

Rog looked at him. "On a planet denuded of natural resources? You've got to have an abundance of raw materials in the early days of colonial development. Later on, you'll have the equipment and techniques to exploit less rich mines and petroleum fields, but at the beginning . . ."

Leslie held up his hands. "But this isn't our problem, is it old chap?"

Cathy said, coldly, "Then you're in the captain's camp?"

"Actually, I don't know where I am, my dear. How did you discover this?"

"I heard the captain and Fodor talking with Pater William. The implication was that it had been worked out between the captain and his officers, and Matthew Hunt, on Earth. But Captain Gluck wanted to be sure of Pater William's vote, if it came to voting."

Leslie said slowly, "Whom did he think might vote otherwise?"

"I'm not sure. I, for one. And evidently Curro Zorilla." Her voice took on a pleading note. "If we all voted against this, and Zorilla as well, we could frustrate the whole scheme and New Arizona would become the paradise a nineteenth category planet should be."

"The poetess again," Leslie said in deprecation.

"Well, what do you say?" she demanded.

He shook his head. "I'll have to think about it. Remember my motivations, Cathy dear. I entered into the company to make my fortune. If I could realize a big killing, in a matter of a few years, it would mean being able to return to Earth, pay off my debts and resume the life I desire in preference to what I hear about existence on a new frontier."

She said, in disgust, "And for that you'd kill the dreams of two thousand colonists?"

"I rather doubt that they, themselves, are as high-flown idealists as you seem to think, my dear. I suspect that each of them is an opportunist on his own scale. Your individual, half-educated yoke down there in third class is just as predatory as Curro Zorilla, Richard Fodor . . . or Leslie Darleen. The thing is, he hadn't quite the chance to realize his ambitions. I keep telling everybody, pioneers are not composed of society's best elements." He twisted his mouth. "They're slobs."

There was despair in her eyes, but she turned now to Rog. "And you, Citizen Bock?"

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For a moment he wanted to reach out impulsively, touch her arm, tell her he shared the dream. But then Zorilla came back to him. He was tied by Zorilla. If the other backed Cathy's colonists, then *ipso facto*, he backed them, too. However, Rog Bock couldn't think of any reason why Zorilla should prefer the colonists to the balance of the board. He was obviously an opportunist above all. Cathy might have the dream of a new world, a veritable paradise, but he doubted that the South American did.

He said, hesitantly, "I'll have to think it out, wait and see how I'll vote."

Her dark eyes gleamed contempt. "Another get-rich-quick artist, eh? Anxious to get back to Earth to spend the rest of life in a perpetual good time."

He looked at her dumbly, it coming to him, all over again, that she epitomized what he sought in woman. What he sought, but didn't have time for now.

He said, trying to find an answer for her, "But all this profit the captain and Matthew Hunt plan to make overnight. The colonists will share in that, too. There's plenty for everyone. They're talking in terms of billions, many billions."

Cathy was scornful. "Share and share alike, eh? I doubt it." She looked at Leslie. "You're always talking about what non-heroes the discoverers, explorers, and colonists are. Do you remember Cortes and Pizarro? As soon as they had conquered the Aztecs and Incas, did they share their loot with the common soldiers who had fought for them? Certainly not. They enriched themselves and left the greater number of their men, such as Bernal Diaz, to live out their lives in comparative poverty. Or take Astor and his American Fur Company. Through his mountain men, his trappers, his fur traders, his factors of the forts he spread all over the Rocky Mountains, he built up the greatest fortune in the country. But was the wealth, milked from that enormous fur industry, shared by his men? Ha!"

Leslie Darleen said mildly, "I'm a great believer in the survival of the fittest, my dear. Astor, obviously, was very fit indeed, as were Cortes and Pizarro."

She said nastily, a bit incoherently in her attempt to lash back. "But how do we know that some of those who survived were the fittest? Man made laws, rules, regulations and customs being what they are, nature's laws don't always apply. Those that survive can always claim to be the fittest and who can say no?"

Leslie, under her skin now, said mildly, "But, Cathy dear, the fact that they have survived is the proof of being the fittest."

She rushed in. "Oh? Suppose we have two planets at odds with each other. By chance, one hits upon an ultimate weapon and destroys the

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other which was more advanced in the arts, in the sciences and humanities. The surviving planet can claim to have been the fittest, but was it?"

He looked at her mockingly. "Yes."

Rog said, trying to get away from the clash of personalities, "But Cathy, your united colonists own one partnership—the one you vote. If the exploitation of New Arizona results in only one billion basic exchange units for each partnership, then each colonist, man, woman and child, would have coming"—he thought it out quickly—"half a million basic exchange units. With such amounts, each could do practically anything. Retire, go into business on Earth or elsewhere, or become a colonist on some other planet."

He had been talking very earnestly to Cathy, but it was Leslie who laughed at him. "My *dear* Rog," he protested. "You're being a bit forgetful. Remember? Our yokes in the dormitories signed two contracts when they received their so-very cheap transportation to the new world. One, which abided by Earth law very neatly indeed and limited their God-given right to sell themselves into unlimited servitude. But the other had a clause truly revealing the far-sightedness of Matthew Hunt. It provided for them a very basic wage for fifteen years. Any income, whatsoever, above that basic amount redounds to the New Arizona Company." He twisted his mouth again. "Which is one of the good reasons I suggest to Cathy that she forget about her colonists and reap the personal benefit accruing to board membership. There is no possible manner in which she can pass on company dividends to the cloddies she represents, so why not take advantage of the situation?"

Tensions grew upon the *Titov* but not to the extent Rog Bock had expected. The death of the berserk colonist, only two days out, had evidently affected Captain Gluck in such wise that reforms he would have balked against, automatically, were easily pushed through. The threat of a space flap epidemic hung always over the spacecraft, nor did the three physicians who represented the colonists fail continually to so remind him.

Rations were upped to two meals a day. Number Three compartment, formerly used to store provisions for New Arizona, was cleared and converted to a hospital. Another, smaller compartment, was similarly cleared for use as an isolation ward.

Jeff Ferguson, gruffly, but with obvious increasing interest, got at the problem and by shifting cargo and even fuel, managed to clear still another hold. This, in turn, was devoted to women with children, and the bunks so arranged that space per capita was thrice that in the regular dormitories.

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The ship's medical supplies were thrown open to Doctors James, Miltiades and Kelly, who, with the assistance of six nurses, discovered in the ranks of the colonists, worked on a round-the-clock basis, medical check-ups never ending. When the long list of would-be pioneers had been examined as thoroughly as was practical under the circumstances, the medicoes went back to the head of the list and began all over again. Thus it was that such cases of incipient space flap as developed were isolated early enough to contain them; some so affected were even returned to their dormitories after a week or so of tight observation.

There were only two deaths among the colonists on the whole trip, neither avoidable. The record was a triumph both of the doctors who had examined each individual before the embarkation and the selfless efforts of the medical committee.

If anything, there was less trouble from the tightly packed third-class passengers than was to be found among those who occupied the quarters of the crew, and especially of officer country. Possibly because the pressures of life among the former gave them less time for intrigue and difference.

It was several Earth days following the attack upon Captain Gluck by the flap enraged colonist that Rog Bock was summoned to the commanding officer's cabin. He had been expecting it in view of what he had been told by Cathy and by Curro Zorilla and had worried over his defenses. He had finally given up trying to resolve his difficulties and decided to take matters as they came.

The captain's quarters, it developed, were as near to luxury as the s/s *Titov* provided. Rog had brought back to mind an item he had once read about Columbus. On the *Santa Maria* the admiral's quarters were larger than the combined living space of all other men aboard, officers and crew. Captain Bruno Gluck didn't go quite that far but his three-room suite certainly by far overshadowed the cubbyhole which Rog called his own.

The captain, at a metal desk, was flanked on one side by Pater William and on the other by his chief officer, Ben Ten Eyck. He made a to-do of welcoming the young board member, seeing him seated, making facial contortions that evidently were meant to be jovial. He even went to a sideboard and revealed bottles and glasses.

Rog said mildly, "I thought alcohol was taboo in space."

It nearly broke his face but Captain Gluck managed a wink. "Rank has its privileges, eh, Bock? Ever tried rum and port, half and half? Comes down from the old sailing-ship days, from Hamburg, toughest harbor in Europe."

Rog shuddered inwardly. Once again, he was no toper, but he had

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sound instincts in liquor. "A little wine, alone," he said. "Thanks."

Pater William chuckled benignly. "I think a bit of port would suit me as well."

Ben Ten Eyck cleared his throat and said, "Whisky for me."

The captain glared at his first officer. "You'll be going on watch shortly, Mr. Ten Eyck." He poured the drinks for the two board members and something for himself, while Ten Eyck looked darkly petulant.

Drinks in hand, they sat around facing each other, waiting for the captain to speak. It was his ball to carry.

He glared at Rog, became conscious of the fact, and took a sip of his drink before trying again, in more friendly wise. He had looked, if anything, less threatening before the new attempt.

He rapped, "Citizen Bock, it's probably come to your attention that there's been some difference of opinion developing aboard my ship."

His tone carried the impression that he was indignant that this could happen on *his* ship. Rog Bock held peace. In view of Zorilla's blackmailing position, he suspected that the captain wasn't going to be happy about the stand that he, Rog Bock was going to have to take.

The captain said now, "You know the shoestring upon which this project is hanging. The reason you and the rest of the board were able to buy in so cheaply was because the risks are so high. We either get fabulously rich or go bust."

"Let us not think of the latter," Pater William said jovially. He was obviously enjoying the wine. Rog Bock suspected the Temple monk had had a few drinks in the skipper's quarters before.

The captain was shaking a finger, and now forgetting not to glare.

"Let's admit, Matthew Hunt wasn't ideally the man to stumble on New Arizona, not having the resources to develop his find." The captain's caricature of a smile was there again. "But that was our good fortune. However, the money he raised by selling shares of the company wasn't enough for the supplies and equipment needed for a bona fide colony. Because, you see, it's got to be bona fide or Earth steps in. To cut it short, Hunt had to finagle a good deal of equipment on the cuff. That's why he had to remain on Earth, rather than come with us. Right now, he's desperately juggling New Arizona Company finances . . ."

"Borrowing from Peter to pay Paul," Pater William got in.

". . . Until we can set down on the new planet and sell some concession that will give us enough operating capital to take off the pressures."

Things were clearing. Rog said carefully, "What was it you wanted to see me about?"

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The captain pointed a finger at him and glared. "Citizen, there's a conspiracy aboard this ship. The obvious thing for us, as soon as we've landed and fulfilled legal requirements, is to sell one of the more valuable concessions. We have already had an offer by one of the petroleum complexes."

Rog blinked. "Sight unseen?"

Ben Ten Eyck rasped impatiently, "New Arizona is nineteenth category. She's sure to have petroleum."

Pater William had finished his port. He patted his belly appreciatively and said, "However, since exploration hasn't as yet taken place, the sum offered us is a fraction of the eventual value."

The captain rapped, "Let me finish, blast it!" He turned back to Bock. "Of course we'd be getting robbed. However, we can't afford not to take some such offer. Probably that one. We need immediate cash. Hunt must raise it, or the company's creditors will take over."

Rog shifted in his chair. "You mentioned a conspiracy."

"Of course! Obviously, we must sell some such concession, but in order to do so we must have a majority vote of the board. We must have five votes."

"You mean six, don't you?"

The Temple monk said chidingly, "My boy, you haven't bothered to read the company charter very well. Only those members sitting at a board meeting have the vote. Matthew Hunt has two shares, but isn't present."

So. If Rog, Cathy, Leslie and Zorilla all bucked the selling of the oil concession it couldn't go through.

"I see," Rog said thoughtfully.

The captain was urgent. "We can't make the sale until after we land and formally inaugurate the colony. However, we'll hold a meeting immediately. With your vote, we can meet the emergency."

The captain swung to a new tack. "I haven't forgotten your action in the dormitories, Citizen. You are welcome amongst my closest associates. Once colonization laws have been fulfilled, New Arizona becomes sovereign. I need not elaborate upon what that means in terms of wealth and power. I am glad to welcome you into the ranks of my . . . ah, faction, rather than count you among my opponents."

"Well, thanks," Rog said. He came to his feet.

"Another drink, Citizen?" The captain tried to beam.

"No. No, thanks. Not now. I want to think over all you've said."

"Absolutely, my boy," Pater William said unctuously. "We must none of us rush into decision without careful meditation and prayer for guidance."

"What's there to think about?" Ten Eyck rasped. "It's all clear. That Zorilla's a crook with some special scheme. The girl's a do-gooder crackpot bleeding over those

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yokes in the holds. Darleen's a molly, but he'll probably come over to us when the chips are down anyway, he hasn't the guts not to."

"Some of these things are new to me," Rog apologized. "I've got to sort them out."

The skipper looked at him thoughtfully, but said nothing more.

Curro Zorilla knocked at his cabin door not half an hour later. For a moment, Rog was surprised at the method of announcement, remembering that the other had used the same manner the last time he had come. But then it had come through. The South American was an old hand at intrigue. He had refrained from activating the door's electronic screen and summons hum, because the device might in some way be hooked up to a bugging arrangement, touching off, elsewhere, possibly in the captain's quarters, an indication that Rog was having a visitor. Possibly, the door's screen was so rigged that the identity of the visitor would also be revealed.

So it was that Rog Bock's first words to his visitor were, "How do you know this cabin isn't, uh, bugged?"

Zorilla's face was as expressionless as always. However, he brought from his pocket a small flat box, about half the size of a cigarette case. "Know what this is?"

"No."

"They call it a mop. It squeals if there's either a wired bug or a transmitter within twenty feet of it."

Rog blinked and sat down on the bunk, leaving the chair for his unwelcome visitor.

Zorilla lowered his bulk and for a long moment looked at him. Finally he grunted heavily and said, "Do you want to tell me who you are and what you're doing on this spacecraft masquerading as Bock?"

Rog shook his head.

"Government?"

Rog shook his head.

Zorilla opened and closed his heavy hands two or three times, in an unconscious gesture, even as he thought about it. Finally he grunted again and rumbled, "All right. We'll postpone all that. But I still hold the whip hand. You vote the way I vote, or I expose you. It's not that I care about the real Bock, it's just that if I can't have his vote on my side, I don't want it against me. Now then, what did you hear from the captain?"

Rog couldn't see any particular reason for not revealing that information. He described, in detail, the whole interview.

At the end, Zorilla stared lengthily down at the deck, nothing to read in his dark Spanish-Indian face.

When he finally looked up, he rumbled, as though to nobody in particular, "Our captain didn't mention the fact that when Matthew Hunt went into hock, back on Earth, to get some of the expedition's sup-

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plies, it was he as an individual, not the New Arizona Company. He and possibly the captain and the ship's officers. They put up their shares in the company as collateral. But my share, yours—Bock's that is—and those of Darleen, Fodor and Catherine Bergman are not affected. If the creditors on Earth foreclose, Matthew Hunt and the captain will lose their portions of the planet—but the rest of us won't."

He grunted contempt. "No wonder he's so willing to sell off priceless concessions to rake together enough to tide them over."

Rog said, "Well, evidently Pater William is in it as well. He seems to support the captain."

Zorilla grunted. "I wouldn't be surprised. Matthew Hunt and the captain seem to represent authority." He wrenched a stogie from his jerkin pocket, bit off a more sizable chunk than is usual for a cigar smoker and spit it to the deck.

For Rog Bock's purpose, the less controversy the better until, at least, his mission was resolved. He couldn't afford exposure now. It might end with his being in the brig, or whatever confinement the *Titov* might offer. That would be fate at its most sardonic. He confined while Peshkopi roamed the ship in freedom—assuming, he had to remind himself, that his quarry *was* on the ship. Within himself, he couldn't believe otherwise. Was the other traveling—as he was—under an assumed name?

He said placatingly, "Why not let them go through with it? With all the wealth on New Arizona the oil concession isn't a drop in the bucket and, like the captain says, it will give the company some capital to work with."

Zorilla's face was coldly empty. He didn't even bother to curl a lip. "You don't know much about interplanetary financial affairs, do you . . . Bock? Those stutes dealing with Hunt back on Earth aren't giving anything away. Their end idea is to own New Arizona outright, with all the rest of us, board members and colonists, out in the cold."

"I don't see how—"

"Shut up and listen. We sell them all the petroleum products on the planet. Great. Then what do we use for oil when we start to exploit the rest of the resources? We'd have to buy it back from them, since we couldn't afford to import it. Importing bulk petroleum, over-space, is prohibitive. If we have to buy the stuff back from them, later on, they'll charge so much we'll have to sell some other concession to raise money for that. Something like radioactives, which later on would prevent us from developing our own nuclear power."

He grunted contempt again. "I'm oversimplifying, but that's what it amounts to. When you're short of capital, you're in no position to exploit a new colony quickly. You're trying to raise yourself by your bootstraps and it can't be done.

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Sooner or later, somebody with the real exchange on hand is going to take over from you."

Rog said, intrigued now, "But what's the answer, then? Obviously, the New Arizona Company doesn't have the capital."

"Figure it out," Zorilla rumbled, coming to his feet. "Hunt and the captain are would-be stutes. But they're really small time. They'll never make it. They'll possibly die trying, and in doing so drag the rest of us down with them, if we don't do something about it."

Rog followed him to the door. The heavy-set South American turned to him. "I'm working on Bergman, Darleen and even Fodor," he growled. "You, I've got in my pocket. And you stay there!"

Rog said nothing.

Zorilla, his expression, as always, empty, said, "I don't know what you did to Roger Bock. I do know you killed one of the colonists with your bare hands the other day. I just don't want you to get any ideas about how tough you are."

With that, in a blur of motion completely unsuspected on the other's part, he grasped with one of his great paws, grabbing up half the area of Rog Bock's shirt and jerkin and pulling him forward. In another blur, so fast and heavy as to be unbelievable, the other huge paw, backhanded, swiped him across the face and wrenched his head to one side.

The grasp upon his clothing kept him from organizing defense, even had the one, two, three of the other's blows not dazed his senses to the verge of knockout. He only half consciously felt himself released, felt himself fall to the floor. Never in his experience, and he had worked out with wrestlers, pugilists and others devoted to hand-to-hand combat on all levels, had he come across such raw strength and such speed of motion.

VI

It came home to the counterfeit Roger Bock just what was the significance of New Arizona being named an Earth-type planet in the nineteenth category when he saw the new world in his cabin screen and later in the larger screen in the lounge. Later still, the captain was to have him on the bridge where the *Titov's* zoom-scanners offered inspection of the new home-to-be in closest detail as they sought the perfect location for set down.

For New Arizona resembled Earth to a degree that Earth no longer even resembled herself.

This, Rog Bock realized with a thrill, was what Leif Ericson had seen when his long boat pulled into the sheltered bays of Nova Scotia. This is what the ironclad Spaniards saw as their sluggish caravels cautiously prodded the coast of Darien. This is what Cook's scurvy-ridden crew had seen when the Sandwich Islands loomed before them.

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This was virgin Earth.

No, he took it back. The Vikings, the Conquistadores, the British explorers, had not in truth found lands so virgin as these, for Vineland had its redskins as did the Americas further south, and Hawaii had its Polynesians. But New Arizona? New Arizona had never felt the tread of man's foot save only that of Matthew Hunt and his crew when his straying space yacht had come through accident to set down for that brief time required to claim a newly discovered world.

New Arizona. One of those exceptions that prove a rule that would seem without exception: That no two planets are ever the same. That the evolution of life ever takes radically different paths, never the same.

He had not been quite sure of the significance of the term nineteenth category, nor had he dared question. It was to be assumed that Roger Bock had thoroughly investigated the possibilities of the new world before ever investing in it. He would know all about nineteenth category planets, and hardly need to ask.

But here it became obvious. A nineteenth category planet was one which for all practical purposes duplicated Earth. Oh, not in number of continents, nor in percentage of land to sea—although even that seemed roughly approximate. But in the appearance, in the *feel*, in the essence! Long before they ever set down, Rog Bock was of the conviction that the air was eminently breathable, the water drinkable, the flora and fauna even edible.

He was standing in the lounge before the screen, unconscious of that about him. Others, he knew, were on the bridge, others following developments in their cabins, crew members crowded about the two screens rigged in the engine room. Only in the dormitories were there no facilities whatsoever through which to gawk at the new home.

The voice beside him said, "Inspirational, is it not, my son?"

Rog brought his eyes around to the Temple monk. He didn't exactly like the other but now he grinned. "I've never seen any planet other than Earth before," he admitted.

Pater William smiled indulgently and patted his tummy through the brown robe he wore. "When I was a younger man, I spent several Earth years as a chaplain aboard a space cruiser."

"Then you've seen many worlds."

"Many."

Rog indicated the screen. Whoever was in control on the bridge had zoomed in on a half-wooded, half pasteurland below; several small lakes were in the vicinity. It was a hunter's or fisherman's dream. As the scanner explored still closer, doubling its focal length every few minutes, there could even be seen deerlike, four-legged grazing animals.

Rog said, "Many like this?"

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The Temple monk shook his head, he was almost as round-eyed as the younger man. "Never. I have never seen a nineteenth category before. One might almost expect to see human beings, cities, at least villages or towns."

"Maybe even that!" Rog said.

Pater William shook his head indulgently. "Hardly that, my son. In all his exploration of this section of the galaxy, man has never come upon other intelligent life. Various theories have been raised in attempted explanation, but whatever the reason the greatest power of all has seen fit to create intelligent life but once."

"But those animals down there—"

The Temple monk shrugged plump shoulders. "Beasts we sometimes find, but no more than beasts. Scoffers, such as Leslie Darleen, claim man to be an accident that will never occur again, but surely it was more than accident that He who is above all chose Earth and Earth alone to produce a creature in His own image."

The eye of Rog Bock went back to the screen. Hunting, fishing, were largely sports of yesteryear on Mother Earth, but man's instincts were yet to be altered. There was a feeling of unease within him that he couldn't analyze. He had a desperate need to go down there into that virgin forest, along those virgin lake edges, to dig his feet into prints in ground that had never seen footprint of man before.

Ferguson entered and shot a glance up at the screen. He grimaced and growled sourly, "Not a nardy bar in ten thousand miles of it."

Pater William said, "Has the captain decided where to set down, Jeff my son?"

Ferguson grunted. "Ten Eyck's working on that now. He was supposed to belong to some nardy expedition once. All I can say is they better get to it. This sort of thing drinks fuel and we're nardy well near out."

Rog stared at him and began to open his mouth for a question. However, he closed it again. Pater William and the First Engineer seemed to think nothing untoward about the *Titov* being short of fuel. Possibly he, Roger Bock, was supposed to be knowledgeable about it as well.

But, *out of fuel.* How was the spacecraft ever expected to take off again and return to Earth?

Ferguson passed through the lounge and out the compartment at the far end, grousing, "I'll be needed in the engine room. That nardy cloddy who's supposed to be chief engineer—"

They set down in a sylvan area but in the largest clearing for miles in any direction. As a ship's officer Ben Ten Eyck might have had his shortcomings, but if his experience as an explorer of new planets had

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stressed the locating of the ultimate in natural beauty, it could have been no surprise. There were immediate small lakes and brooks and streams, there was a larger lake no more than two or three miles off. The earth was firm, where the *Titov* sighed to a cease of motion, but grassed as the fairway of a golf course.

It looked to Rog Bock as though a Tri-D production team had landscaped it all.

As passengers they remained on the sidelines whilst specialists among the officers and crew went through technical details less than understandable to the layman. Sampling of this, testing of that. It lasted for hours, although, supposedly, most of this had been accomplished by the yacht of Matthew Hunt long months before.

When finally they were able to look out over their new domain without need of mechanical go-between, Rog stood in a trio with Cathy and Leslie Darleen.

Leslie twisted his face, though obviously he was as impressed as the others. "First thing we want to do," he drawled, "is start a country club." His eyes shifted to Cathy, slyly. "Highly restricted, of course. We wouldn't want the common herd, not even the *nouveau riche,* to intrude."

"What is a country club?" Cathy said, her hackles obviously beginning to rise. She knew there was a barb, somewhere.

"Oh, a place where we of the idle rich can disport ourselves in comfort while the downtrodden poor are confined to their slums."

Cathy said sharply, "Ah, are we going to have slums on New Arizona?"

Leslie shrugged hugely, his humorous moue overdone. "We'll have to construct some, first thing off. How, otherwise, are we going to be able to tell board member from colonist?"

In spite of demands on the part of all but hysterically impatient colonists in the dormitories for immediate landing, it was a full thirty hours, a complete day on New Arizona, before they were allowed to begin streaming down the short gangplanks which led from the entry points set into the ship's pneumatic landing stilts. Out of the confines of the bowels of the s/s *Titov* and out into air clearer by far than any had ever experienced on the planet of their birth.

Rog, standing with Leslie Darleen and Curro Zorilla, now saw a woman burdened down with a child and next to her, obviously her husband, stop for a moment at gangplank's top and blink out into the light of the Sol-type sun. The man's clothes were soiled with the long weeks in space, his face thin and wan. His eyes shifted, as though suspiciously.

He grumbled, "Zen! It smells funny."

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His wife was dumpy. She had evidently lost considerable weight during the trip since her skin had a flabby appearance, but still she was dumpy. She whined something in response. Somebody behind them snarled at the delay, and they started down the gangplank, he going first.

Leslie Darleen chuckled acid. "Slobs," he said. "The slob we shall always have with us. Fresh air smells funny to him."

Zorilla, without looking at him, rumbled, "It'd smell funny to you, too, if you'd been in those holds for this length of time. We're lucky they're alive."

Leslie's tone was still light. "Only in so far as we need them to prove bona fide colonization, my dear Curro. Otherwise, it's a great shame we have them upon our hands."

"On our hands?" Rog questioned. "What would we do without them?"

The corpulent hedonist snorted. "What will we do *with* them, other than feed, cloth and shelter them? You didn't labor under the illusion that these types are capable of intelligent effort did you? Why do you think they were in such a hurry to leave Earth?"

Zorilla looked at him, expressionlessly. "There is one thing that happens on a frontier, Citizen Darleen. The incompetent are quickly killed off. Frontiers are places where men learn brand-new ways to die. And there is no margin of safety, since there's no one to back you up. We'll soon find who the slobs among us are."

Leslie was taken aback by the underlying forces in the other's words. He said, "Now really, Curro old chap, aren't you dramatizing? The only reason we brought these cloddies was to fulfill Earth law. Very well, now it's fulfilled and we'll have the bother and expense of feeding, housing and clothing them for a time. Happily, we brought most of the supplies along to handle this. More will be coming shortly. Once solvent, the New Arizona Company will be zeroed in upon by every space merchant within a few hundred light-years."

"I can see," Zorilla rumbled flatly, "that you haven't had much experience on the frontier, Darleen. New Arizona's got a long row to hoe before space merchants or anybody else start beating paths to our door." He turned and lumbered off.

Leslie looked after him and chuckled, but without as much humor as all that. "Our wild man from the pampas seems on the pessimistic side," he said wryly.

Rog was looking after the South American, too. "He sounds as though he knows something we don't," he said thoughtfully.

The ship's robos began unloading immediate supplies even while the third-class colonists were still disembarking. Rog Bock, fascinated, drifted about watching it all.

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Actually, there was more order than he might have expected after having viewed on several occasions the near chaos that had applied in the dormitories during the trip from Earth.

Evidently, in what amounted to self-preservation, the colonists had formed some sort of organization. There had been four holds devoted to dormitories, and they had evidently divided themselves on this basis for purposes of eating, distribution of other supplies and such matters. Each group had numbered approximately five hundred persons, men, women and children. Now they kept to that division and as the *Titov* emptied, gathered on the plain about it in their subdivisions.

Before long, members of the ship's steward department had set up field kitchens and evidently whatever organization the colonists had improvised had appointed assistants to the stewards for the purpose of ladling out food proportionately. It was being handled fairly well, Rog thought.

Captain Gluck's officers, sweating in the unaccustomed heat of a midday sun, were everywhere, organizing, supervising. Rog noted, mildly surprised, that they carried sidearms, hand blasters in quick-draw holsters.

For the time being there was little the first-class passengers could do other than keep out of the way. Ben Ten Eyck had informed them that until time was found to erect suitable quarters on the planet's surface, they were to remain in their cabins on the *Titov* and to take their meals in the spacecraft's lounge as before. Less than satisfactory that arrangement might be, but there was little alternative.

Fodor indeed, didn't bother to disembark in the immediate hours of the landing, but kept to officer's country on the ship, as though dourly disapproving of the whole affair, which seemed ludicrous to Rog Bock who was exuberant in the living of a dream that had been his since earliest youth.

Pater William ambled amiably about, stopping here and there to pat a younger child, to speak a few words of deprecation to someone overly anxious to push forward in a food line, to give a few words of encouragement to a group performing some heavy task. At one point, Rog could see a sweating Jeff Ferguson, working over a portable power plant, look up darkly after the Temple monk and growl some profanity under his breath.

Cathy Bergman, immediately upon setting foot on ground, had taken off to join the leaders of the colonists who were soon to set up what amounted to a command post a hundred yards or so from the *Titov*. The committee gathered here with a dozen of the younger colonists who were utilized as messengers and aides.

The captain, armed as were his

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officers, had taken in this development with a baleful eye and had seemed on the verge of some action against it until Peter Zogbaum, the chief steward, had pointed out that this spontaneous organization on the part of the dormitory passengers had speeded up considerably the preliminary steps involved in getting them fed and squared away for temporary sleeping shelters.

Even this early in the proceedings, however, it was obvious that all was not tight discipline among the two thousand plus pioneers who had crossed space in the s/s *Titov*. Among each of the four groupings were those who drifted away from their elected monitors, avoiding whatever tasks were there to be participated in by everyone. Largely, they seemed to be the single men and women, though whole families also drifted off, as though on a picnic.

Some, Rog noted, gathered in small groups and wandered away to take a closer look at forest or lake. Some, in the exuberance that Rog himself felt at being free on this new world, took to horseplay and sport. Indeed, ridiculous as it looked while the ship was still being unloaded, tents going up, field kitchens beginning to steam the odors of food, a hundred tasks to be performed before the fall of night, a ball game was shortly under way.

Rog Bock had stared at that at a distance for a time. A full sixty persons must have been involved in what seemed a form of soccer. Another hundred and fifty stood or sat on the sidelines, yelling encouragement, passive onlookers.

Leslie Darleen had passed, freshly attired in foppish sportswear, and chortled amusement at the expression on Rog's face. "What'd you expect them to be doing, hewing down the forests already?"

Rog scowled, uncomfortably. "Well, there are a lot of things to be done. We've got to at least get up those tents for the mothers with young children. What are they waiting for?"

Leslie laughed sourly before going on his way. "They're waiting to be fed. And after that, they're waiting for somebody to set up tents for them so they can go to sleep."

Rog had made some gesture toward participation in the community efforts himself and for his pains shortly had Roy MacDonald approach him and take him to one side.

MacDonald, a brawny, hard bitten ship's officer of the tough school had said apologetically, "Citizen Bock, the captain sends his compliments and suggests that colony discipline will be impaired if members of the board lower their dignity by participating in manual labor."

"Oh?" Rog said blankly. The work was there to be done.

MacDonald's grin revealed crooked teeth. "Doesn't look very important now, Citizen, but sooner

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or later there's going to be discipline problems. We'll need every bit of prestige we can build up. We might own New Arizona, but we're not going to keep it unless we let these yokes know who's on top, and who's below." He tapped the gun at his hip, significantly.

Rog, still caught up in his dream realized, said unhappily, "We came here to colonize this planet, Roy, not to kill each other off."

The ship's officer did a fairly good job of concealing his contempt of that opinion. He said only, before saluting and moving away again, "There're two thousand of them and seventy-five of us, Citizen."

When the other was gone, Rog looked after him. He wondered who the seventy-five were. And he wondered what pressures there were abuilding of which he, evidently, was as yet unaware. He thought there had been enough in the way of pressures already. The less than simple task of establishing a colony of humans on a new planet was complicated a dozen times over with problems seemingly far divorced from what should be engaging the efforts of those involved. Intrigue and counter-intrigue. What in Zen did it all have to do with building a new world!

Who the seventy-five were, came home to him shortly. At a distance, he could see Ben Ten Eyck with some thirty or forty of the ship's spacemen and noncommissioned officers. They were equipped with blaster rifles and bore other equipment obviously of a military nature. Ten Eyck organized them into four squads, each with a leader and sent them marching off. Probably, Rog decided, to explore the immediate area, both forest and field.

Well, that was an obvious step to take, although it would seemingly make sense to have recruited some of the force from amongst the colonists who, sooner or later, would have to take over such responsibility—if the need existed. Offhand, Rog Bock could think of no need for a military force on New Arizona. Protection might be needed against predatory animals—though supposedly, from Matthew Hunt's original report, these were small in size on New Arizona—but not a military force.

It occurred to him that he hadn't seen Curro Zorilla since the first hour of the landing and idly kept his eye open for the South American. He was not sure of his feelings toward the other, in spite of the fact that the larger and older man had twice beaten him to the verge of unconsciousness. That there would one day be a reckoning between them was without doubt, but if their antagonism was one to the death or not, he didn't know. Meanwhile, he must needs get along with the other, so long as his identity as Rog Bock was to be preserved.

There was always that, of course. He could himself reveal that he was not Bock, and apply for a

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position among the colonists. However, as the lot of that group became ever more clear, the desirability of casting his fortunes with them became the less. Whatever picture had been painted of colonizing New Arizona when all involved were still back on Earth, the reality, here on the new planet was going to be considerably different.

It came to him that all this was not in truth his interest. He was here to settle scores with Peshkopi. Let colonists and the New Arizona Company settle their problems between themselves—he had his own. And it came to him that it had been considerably more desirable had his task been more cut and dried. If, for instance, it had developed that Curro Zorilla was Peshkopi and he had been able to meet the other, face to face, man to man. Always assuming, always assuming, the other was truly in the expedition at all.

He spotted Zorilla, finally, off to one side, with perhaps a dozen male colonists about him. The South American was hunkered down on his heels whilst the others stood, scowling down on scratchings the big man was making with a stick on the ground. Evidently, Roy MacDonald hadn't succeeded in this case in dividing board member and colonists. Zorilla seemed deeply in his element, the others fascinated with what he was saying.

It was the following day the captain held the first all-colony conference.

The first day the organizing of the temporary camp had proceeded at least as well as could have been expected. Possibly half of the total company had participated in the setting up of emergency quarters, emergency eating facilities, even an emergency hospital tent. The rest had stood by, either busy with other duties, unable, or unwilling to join in the work. Rog Bock had been astonished at the number who, quite honestly, were incapable of helping, their background being such that they would have been more hindrance than aid.

Leslie Darleen had thrown his head back and laughed that night at dinner in the *Titov's* lounge when Rog had asked the question in honest puzzlement.

What had these expected to do upon arriving on the new world? If they were unable to participate in erecting a tent, how did they ever hope to plant a field, domesticate animals native to this world, fish the lakes, hunt the forests, delve in the mines?

"What had the Pilgrims in mind when they landed at Plymouth Rock?" Leslie had chortled. "Half of them were dead by next spring. They didn't have the ability to cook the corn the Indians brought them."

The captain, his mind obviously dealing with a dozen problems, had snorted, "Yokes," and nothing more.

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The meeting of the total company of the *Titov* was held on the following morning and, save only three or four of the crew whose presence on the ship could not be spared, included board members of the New Arizona Company, ship's officers, the crew and all colonists except the very few incapacitated in the tent hospital and the nurses caring for them.

Comfortable chairs had been brought for the board and Richard Fodor, Curro Zorilla, Roger Bock, Leslie Darleen and Catherine Bergman sat together, in a row, facing the colonists. A small table with refreshments, including wine, was before them. Two stewards stood behind, available to their orders.

Slightly to their right was a table at which sat the captain flanked by Ben Ten Eyck and Thor Kaivokatu, the chief engineer. Pater William sat here, too, though in a chair similar to those of the other full members of the board.

The balance of the ship's officers sat at another table, still further to the right. Next to them, in ranks, as though a military grouping, were the ship's crew, deck, engine, steward department and Sparks, who alone represented communications.

Before these sat or stood the colonists, divided roughly into their four subdivisions which had originally been based on the dormitories. Their committee, now evidently augmented by new delegates, from what constituencies Rog didn't know, stood half a dozen feet in advance of the rest and were early awarded with a bleak glare from Captain Bruno Gluck.

Pater William opened proceedings with a mercifully short benediction which dealt with the sacred duty of all, based upon their station, to do their utmost to bring to glorious fruition the well conceived plans of the New Arizona Company as determined by its officers.

Leslie Darleen, seated between Rog and Cathy, murmured sarcastically, "Amen."

The captain followed with a clipped declaration that the sovereign planet of New Arizona, having fulfilled all requirements of colonization as provided by the mother world, Earth, was now proclaimed. He turned over to his chief officer the reading of the New Arizona Company charter.

Ben Ten Eyck droned through this for the next half hour. Rog Bock didn't bother to listen. During the past week he had made a point of studying the document in detail, partly through lack of other method to pass time, partly in knowledge of the fact that he was assumed to know its contents and failure to do so put him in a questionable light.

He noted what would seem an uncalled for shifting of position, squirming and murmuring during some of the passages devoted to the relationship between colonists and the company. But there were no

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voices of protest, not at this stage. Rog Bock wondered how many of those two thousand gathered before him had read the small print of the document, when they had signed up for the bargain trip to the new paradise.

Following the reading, the captain came to his feet, turned and jerked his head in a caricature of a bow to the members of the board, turned back again to the colonists. His voice came in a military bark.

"Due to conditions in space, discipline has become lax. As spokesman for the company, I shall now take preliminary steps to remedy this."

From the side of his eyes, Rog could see Curro Zorilla stir in his chair, his face go into the blankness of expression which signified most in the facet the South American presented to the outer world.

The captain rapped, "The greater part of the crew of the *Titov* has seen military duty. I propose that in the future they act as the colony's police force."

Zorilla began to lurch to his feet, but it wasn't from that source Gluck's first objection came, nor from the murmuring colonists.

From the front rank of the crew, a small, anxious faced deckman with ludicrously large ears, emerged, voices from behind urging him on.

Rog vaguely recognized the man as Samuelson, who had been on gangplank watch the night before burn off, when he and Jeff had staggered back to the *Titov*. He had seemed a dogged, argumentative type even then. Evidently, he was a spokesman of sorts for the ordinary spacemen of the crew.

He wagged his head now, defiantly. "Hey, just a minute, skipper!"

Ten Eyck rasped, "You know how to address a commanding officer, Samuelson!"

But the little man wasn't having any. "Sure I know how to address an officer aboard ship. We ain't on the ship. We're on land. Nobody's better than me, here on land."

Leslie Darleen murmured lowly. "Space lawyer. The defender of rights we will always have with us."

Rog felt unhappy, but said nothing.

"Well, Samuelson!" the captain rapped.

"Captain, you talk like the rest of the men here, and me was going to be on this here planet for a long time. Well, that's not what we figured. Some of us got families on Earth. We understood we'd lift this colony, and then go back soonest. Special bonuses and all, on account of the conditions, but we was heading right on back. And that's what we want. If you want fuzz-yokes to police this here new colony, gettum somewheres else."

He had finished his piece but he remained there, a defiant little man awaiting his answer.

The captain barked, "Mr. Ferguson!"

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Jeff Ferguson stood from his place at the officer's table. His eyes were straight ahead rather than on Samuelson or the rest of the crew, and he looked gruffly uncomfortable.

"The s/s *Titov* has insufficient fuel to return to deep space. Even if we had the nardy fuel, the ship's in no condition to undertake the trip."

Samuelson, indignant, began to blurt, "What's this . . ."

The stocky first engineer's eyes slewed around to him. "The nardy fact is, and any nardy spaceman worth his nardy pay should've known it, the *Titov* was in no shape to make *this* trip. Only a gang of cloddies would've burned her off, bonus or no bonus. Patch her up if you want to, but here's one engineer not going to be aboard."

An oiler hurried out to Samuelson's side, his face in fury. "The *Titov*'s got standard emergency equipment. We can extract fuel to take her home!"

The chief engineer, Kaivokatu, growled around the pipe he held in his teeth, "Extract fuel till hell freezes over, but no engineer in this company is going to burn that ship off again. I suggest she be stripped and used for building the new colony."

Samuelson yelled, "How do we get home!"

The captain moved in again, his visage granite. "That's the problem of any crew member who does not wish to become a member of his colony."

Samuelson yelled, "We'll go back on the first ship that touches down here!"

The captain nodded, grimly. "At the first board meeting, I plan to submit new laws pertaining to immigration. Among them will be one allowing citizens of other planets to remain on New Arizona for three months without a visa. Following that, such a visa will be necessary or criminal action will be taken."

The little crewman was scowling puzzlement. "What's that mean?"

Ben Ten Eyck rasped petulantly, "It means, you flat, that you either become a colonist in three months, get off the planet, or go to prison. I might add, at hard labor."

"There ain't no way of getting off the planet in no three months!"

"A shame," Richard Fodor muttered.

The two crewmen, confused, and obviously wanting to consult their fellows, fell back into the ranks.

Leslie Darleen had been chuckling softly, under his breath. Now he whispered to Rog, "That should set some sort of record in wholesale shanghaiing of a ship's crew, since the days of the British press gangs."

Curro Zorilla had come to his feet with all the grace of a bear. He rumbled now, "I'd think our police force should come from the ranks of the colonists. It would seem that among their number

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there must be some with such experience."

Cathy Bergman said clearly, "I second that!"

Richard Fodor came to his feet, shaking his head. "If members of the crew wish to join our colony, they will do so as colonists without contract, as *free* men, and unaffiliated with colonists under contract. Obviously, this would be an advantage in a . . . uh . . . police force."

Samuelson sang out, "I'm not joining anything."

The captain rapped, "We shall put it to a vote. Board members in favor of our military and police force being recruited largely from the ranks of the crew, will so signify."

The hands of Fodor, Pater William, the captain and those of the senior officers, save Jeff Ferguson's went up. Leslie Darleen's eyes went round, he shrugged lazy amusement, and raised his hand as well.

Cathy and Zorilla held the negative. Rog Bock, his vote at the South American's command, refrained with them. The captain eyed him in surprise before turning back to his audience.

However, it was then the interruption came.

Sparks had been one of the few who had missed part of the meeting. During the reading of the company charter he had slipped away, the hour having arrived for his attempt to get in touch with the nearest base of the Space Forces, and through it, to Earth and the other inhabited worlds of the far flung, loosely knit league of United Planets.

He came hurrying down the gangway now, obviously flustered. He half ran to the table at which the captain presided.

The captain glared at him. "Well!" he demanded.

"The radio!" Sparks blurted. "It's been . . . wrecked. It's been all torn apart!"

VII

They stood about the communications room or in the corridor outside, since space was limited, and stared at the wreckage. In actuality, only two or three of their number had the vaguest knowledge of what was involved. Certainly, Rog Bock didn't. To him, it looked as though a madman had taken a sledge to Sparks' equipment.

Sparks, his voice on the edge of hysteria, was trying to explain the extent of the damage. "It's not as bad as all that," he repeated twice. "I could repair the whole thing . . ."

"It's not as bad as *what,* blast it?" the captain barked.

"If I had just a few parts, plus some of that material we were supposed to have brought for the colony."

Zorilla's voice interrupted flatly. "What material were we supposed to have brought and didn't?"

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The captain began to say something, then clamped shut his mouth.

Sparks said, "The communications for the colony. Plenty expensive, so when it was decided the *Titov* wasn't going to return and we could use the equipment here on the ship . . ."

Cathy Bergman, who was in the corridor, bit out, "So, it was never meant that the *Titov* return. No wonder the ship was crewed by toughs, ex-military personnel and musclemen. It was known they were going to be used to keep the colonists under iron control."

The captain suppressed his fury. "Control, Citizeness, so that members of the board, such as yourself, will be safe. Nothing is necessary more than strong discipline in a new colony."

"Especially," Leslie murmured, "when the yokes are being repressed to a degree never known before in Earth colonization."

The captain's glare was murderous. "Are you questioning my leadership, Citizen Darleen?"

"Not so far," Leslie said easily. "Remember me? I'm in this for a quick turnover. I just want to be sure it's my capital that's turned over, not myself."

The colorless Fodor said thoughtfully, "One thing has been accomplished by whoever did this. We're not going to be able to sell any concessions, oil or otherwise, until we can make contact with the outside. No one is scheduled to come here, Zen knows, and we have no way of sending a message out."

Pater William said aghast, "But who would have perpetuated such a desperate deed?"

The captain's stony glare was even for the Temple monk today. He rapped, "Someone who wished to block the immediate sale of concessions, obviously! And since this room is in officer's country, it had to be one of our number." His glare went to Zorilla and then to Cathy.

Rog shook his head, thoughtfully. "No, sir. Not the way we've been doing the last two days. Everything's been confusion. Just about anybody from the crew, or even third class, could've come in here."

Sparks, who had boiled off some of his hysteria by now, put in, "One thing, whoever did this knew what he was doing. He broke parts that were indispensable. It wasn't just some cloddy from the dormitories."

The captain turned abruptly and marched away.

Leslie looked after him. "Now," he drawled, "the fat's in the fire. Somehow, the skipper's got to speed up operations before the creditors back on Earth sell Hunt and him out."

In the following week, Roger Bock learned more of the nature of the New Arizona Company and of colonies in general than his life's ex-

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perience to this point, including his weeks on the *Titov* had supplied him.

He found, for instance, more efficiency in the workings of the Company than earlier indication had led him to believe existed. A number, though far from a majority, of the colonists who had suffered out the passage in the dormitories, had been selected for the positions they were to occupy in the new world. They were specialists, technicians, mechanics.

Even some of his fellow board members surprised him. Richard Fodor it turned out was a mining engineer and Rog Bock began to suspect that the chair he held on the board was in actuality the property of a corporation back on Earth rather than belonging to Fodor himself, outright. Zorilla, he found, was highly knowledgeable in both farming and ranching and quickly dominated that aspect of the new colony. Even Leslie Darleen developed into an obviously experienced accountant whose background in electronic punched-card control of supply proved priceless.

Cathy Bergman somewhere in her past had evidently been a tycoon's ultra-efficient secretary and though she spent the greater part of her time among the colonists and working with their committee, her skills were also of considerable aid to the board meetings which were held daily.

Each colonist had a complete report on his attainments and experience, not to speak of all aspects of his personal life. In short order, Leslie, assisetd by Rog and some clerks, had run the two thousand of their number through the collators and selected those immediately needed for colony tasks, especially construction technicians.

Partially prefabricated structures went up, overnight, to augment the tent town which had first housed the colony. Sites for more permanent, more prestigious abodes for board members were selected on a nearby rise which commanded a noble view, and preliminary work begun on residences. It was only at this point that Rog Bock discovered that furniture and household appliances of expensive design had been brought out from Earth to furnish these. The rigors of the frontier were not to be borne by the New Arizona Company high command.

It was here, too, that he found himself assigned a secretary and a valet, and was given to understand that when his house was finished it would be staffed further with maids and a cook. Cathy had dismissed, in high dudgeon, her servants, claiming them needed in the common effort. Rog, not knowing what to do with his, had postponed utilizing their services until, at least, the permanent residences were completed.

It had turned out that the *Titov*, in her freight holds, had brought with them four floaters, two small

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one-man affairs, one of medium size, four passengers, and one a large six-crew craft which could have circumnavigated New Arizona with ease and speed. The smaller machines patrolled the immediate neighborhood, mapping it, while the larger craft went out on expeditions to locate ores and other immediately exploitable natural resources. From the first, Richard Fodor predominated in such surveys.

Even hunters and fishermen were located amidst the ranks of the colonists and sent out to augment the colony's food supply. In groups of four or five, usually equipped with gravity sleds or compact air-cushion trucks, they took off in the dawn to return in the afternoon with fresh meat for the kitchens and for the tables of many who had never tasted animal protein before. Some, among the colonists, indeed, refused to eat it—at first. They didn't at second, in realization that their imported food supply was rapidly diminishing.

Curro Zorilla it was who delved into the *Titov's* hold for agricultural equipment, fertilizer and seed, to discover, in disgust, that of all supplies brought for the new colony, these were the most inadequate. The scene with Captain Gluck had been hot and furious. It was obvious agriculture had been slighted. The New Arizona Company had little intention of sticking it out on the new planet long enough to have farming on any scale beyond gardening pay off.

In spite of the inadequacies, however, he organized a considerable group of the colonists, who seemed to lack abilities in areas in more immediate demand so far as the Company's needs were concerned, and laid out fields for plowing and for the sowing of cereals. Fields, it seemed to Rog Bock, in excess of the needs of two thousand persons.

And Zorilla it was who sent his people forth to capture alive a wide variety of the native fauna. Most of the struggling animals that were brought back were obviously of no possible use to the colony, not even as animal food. Some were game, and would ever remain game. But also, a peccary-like, rooting animal that was obviously omnivorous, was discovered and its breeding begun to see if it could be developed into a New Arizona version of the pig. And a medium sized antelopelike creature, which had attributes of the goat, was easily tamed and seemed to have an udder capable of being bred up to a size that would make it practical as a milch animal. They were on the trail, too, of a prolific egg-laying landbound bird for poultry, but were as yet to be satisfied.

Rog, to his disgust, found himself to be almost as useless as Pater William. Even more so. At least that pompous worthy spent his time waddling about with his hail-fellow

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beaming, his unctuous words of encouragement, his ever-to-be-found opportunities for speeches and blessings.

Rog Bock? Aside from his original help to Leslie on the files, the only thing that occurred to him that he might be capable of handling would be a classroom of the youngsters, but even that was not vouchsafed him. His abilities would have allowed for children of junior age, not of the higher grades, and his dignity as a member of the board would hardly allow him to participate in education on a grade-school level.

He took to sticking near the captain and the group always immediately about him. It was there that the action was strongest, and Rog Bock was fascinated by the workings of a colony in its birthpangs. In a sense, he stooged for the commanding officer, being used as a liaison man between Gluck and the other members of the board and sometimes the colonist committee. Nor did he take it as particularly untoward when early in the game he was issued a hand blaster, as had been the *Titov's* officers and the greater part of the crew. Pistols he had known all his life, and to have one comfortably on his hip gave him no feeling of strangeness.

Days were spent in the fascination of the boom town. Of buildings going up, of fields being plowed, of hunters coming in with ever more exotic game animals, of fishermen with tons of the denizens of New Arizona's streams and lakes. Of the floaters whooshing in with stories of the ocean only fifty miles to the west, of bogs to the north with the sheen of oil upon them, of great forests a thousand kilometers to the south with trees that dwarfed even the Redwoods of the American West Coast.

Days were spent judging the quarrels that broke out between colonists over women or property, over more desirable quarters, or over protests against a labor draft quota. Evening hours were spent largely playing battle chess or in arguing with Leslie Darleen who found satisfaction in pointing out developments that he had anticipated back when they were still in space.

It had been less than a month before Ferguson had appeared one night, after hours and with an overly done wink, suggested that Rog join him in a little expedition into the tent town. The younger man wasn't loath. He had never seen the colonists of an evening, and wondered how they relaxed.

A goodly number of them relaxed, it turned out, in much the manner man had relaxed back on Earth down through the ages.

A great tent, which had obviously once been meant to house a community mess hall, had been converted to more convivial activity. To one end a raised dais sup-

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ported a band of half a dozen instruments, and music blared out with more volume than disciplined art. Rog vaguely recognized a rock 'n'swing tune popular at home before they had left.

There were possibly two hundred dancers, some of them to his amazement obviously staggeringly drunk. But how! Surely the *Titov* hadn't spared desperately needed freight space for importing large quantities of alcoholic beverages.

Jeff Ferguson grumbled, "Over this way, laddy. I owe you a couple of nardy guzzles."

Over this way was an improvised bar, some long planks, which supported glasses and various sized bottles. Behind the bar, aprons about waists in the manner of bartenders down through the centuries, stood three sweating, beaming colonists, half drenched themselves.

The first engineer tossed a small plastic box to the planks, selected two glasses and inspected them for cleanliness. One of the bartenders took up the box and inspected its contents.

"O.K., I guess," he muttered. "Half liter."

"One liter," Jeff growled back. "You think those nardy things grow on trees?"

The other shrugged. "O.K., a liter. I can trade them off to some other cloddy." He reached for one of the large bottles and upended it over the glasses Ferguson had appropriated.

The red stuff was stronger than wine, not quite so potent as spirits. To Rog Bock's surprise, it didn't taste as bad as all that. Something like—he couldn't quite put his finger on it—a cherry liqueur.

Jeff winked at him. "Not too nardy bad, eh?"

The music behind them blared out in such force that conversation involved all but shouting.

"What is it?" Rog demanded. "Where's it from?"

"Whot'd'ya mean, where's it from?" Ferguson grinned. "What do you nardy well think? It's from New Arizona."

"In three weeks? Distilled liquor in less than a month?" Rog stared at him, and took another sip. It was remarkably similar to the brandy made from the gigantic black cherries of the Dalmatian coast.

Jeff Ferguson finished off his glass, still grinning, poured a new one. "I helped the boys out," he admitted gruffly. "The nardy woods are full of these berries. We put a bunch of the women and kids to picking them. Some of the crew who refused to sign up in Ten Eyck's police force—and I don't blame them—pulled off a stute little romp and swiped the materials to make a press. One of the stewards got some yeast from the galley and they started a batch brewing.

"Well, but this is distilled!"

"Not exactly," Ferguson grinned. "It's been deep frozen. A week or

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so ago a few of the boys jockeyed a nardy deep freeze out of one of the cook tents and hid it away. Easier than distilling. You take a small barrel of this fermented berry juice and stick it in the deep freeze. As it freezes, the alcohol goes to the center and the water and gook turns to ice. After a while you pull the barrel out and chop a hole into the middle and there's a few gallons of this guzzle. Not bad, eh?"

"Not bad at all," Rog said, still mystified by some aspects of the operation. Evidently, armed police or no armed police, already the colonists were appropriating equipment from the ship's supplies to fill their needs.

He said, indicating the rush business the bar was doing, "What do they pay with? We haven't established a medium of exchange on New Arizona."

Ferguson grunted. "They pay with *real* money. Things that are valuable. Whot'd'ya think was in that box I gave the bartender? Fish hooks, that's whot. Almost anything has value. Nails, tools, clothes, empty bottles, that sort of thing. You know the most valuable thing on this planet right now? A blaster. Offer the bartender a nardy gun and he'll sign you up for enough liquor to last you into dipsomania."

Rog was really staring now. He took another gulp of the drink. "A blaster! Where would anybody get a blaster?"

Ferguson sneered. "Some were smuggled aboard by colonists. Some've been sold by crew members who wanted a drink but bad, and didn't give a damn what the captain'll say when they report it lost or stolen. Oh, there's blasters around."

Down at the other end of the bar, Rog could see Samuelson, the wiry little spaceman who had argued with the captain at the first colony conference. He was obviously drunk, and had his arm around the waist of a blowsy blonde straight from a Tri-D show depicting a fallen woman in a saloon of the Old West.

The engineer caught the direction of his eyes and followed them. He grumbled, "It don't take long, does it? Less than a month and we got bars and mopsies to hang out in them."

Rog came back to their earlier subject. "What would the bartender want with blasters?"

Ferguson looked at him in gruff scorn. "What do you think? He'd trade it for whatever *he* wanted. Clothes, jewelry, knives, tools. Zen, there was a-stute in here yesterday with a nardy auto-plow. Wanted to trade it for a blaster rifle, fishing equipment and camping stuff."

Rog blinked at him.

Ferguson explained. "This guy and his wife was all set to take off into the boondocks with their two kids."

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"An auto-plow. Where . . ."

"Where do you think? He pulled a romp. What other way is there for a colonist to get hold of something that important?"

"But who could he trade it to?"

Ferguson shrugged and growled, "Search me. I don't think he was able to turn it over. Next week, or next month might be another story. An auto-plow with a power pack is going to be worth its weight in radioactives before you know it. How about us getting another bottle? You got any money?"

Rog looked at him blankly. The liter bottle, sure enough, was showing signs of depletion. Jeff Ferguson had a capacity for the drink that was startling.

"Real money," the engineer explained. "Something *useful.*"

Rog fumbled in his pockets, came up with a knife.

"That'll do it," Ferguson said, reaching for the pocket blade. He tossed it on the counter, it was appraised and another two liters of berry liquor presented.

Rog said, "If you helped organize this bootlegging scheme, I'd think your guzzle would be on the house for all time."

Ferguson filled his glass again. "I had a percentage, but I lost it."

Rog looked at him.

"In one of the gambling tents," Ferguson groused. "I should've known better."

"*What* gambling tent?" Rog blurted.

Jeff grinned at him again. "You got a nardy lot to learn, laddy. Never seen a boom town before, have you? There's this dance hall and there's a couple of gambling halls. Dice, cards and one of the boys is knocking together a roulette wheel. Couple of other stutes say they've located a kind of wild cereal and are trying to get together the material for brewing it. They figure on opening another bar." He grumbled reflectively, "I think maybe I can get in on that. They need some stuff from the engine room." He thought for a moment. "Which reminds me. I got to crack down on the cloddies working for me. They'll steal the nardy ship blind."

Rog had slowed down on his own tippling. What the other was saying was of far more interest than the slightly sweet liquor.

He demanded now, "But you've got a fifth interest in a share of the New Arizona Company, Jeff. You don't need to fool around with small-time free enterprise among these colonists."

Jeff eyed him. "Oh? You sure? Maybe I'm just hedging bets, laddy. Whatever way things wind up, I figure on Jeff Ferguson coming out all right. This is possibly the richest nardy planet in the system. We're here on the ground floor, laddy, and it's our own faults if we don't wind up rich."

"Your fifth share in the Company will wind you up one of the

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richest men in United Planets."

"Either that or with an extra aperture in the head, laddy."

"I don't know what you're talking about."

"I'm talking about the fact that there's about seventy-five board members, officers and crew and over two thousand colonists who figure they've been taken by this New Arizona Company. And don't forget that not all the crew is exactly happy about the way the skipper dragooned them into becoming his police force. Not all by a nardy sight."

"Jetsam!" Rog scoffed. "The laws protect the Company. Why, this whole planet belongs, lock stock and barrel to the New Arizona Company."

As he talked, the music had cut off and his voice rang high over the silence that ensued, particularly the last sentence.

A narrow-eyed colonist who had been standing next to them, drinking and arguing nastily with a companion, whirled on him. His truculent glance went up and down the length of Rog Bock, who was, of course, garbed in the overly flashy clothing of his namesake.

"And what's gonna keep us from passing a few new laws?" he snarled.

Rog looked at him. In actuality, he had considerable sympathy for the plight of these hundreds of dreamers who had been sold a bill of goods about their prospects over-space. In his role as a member of the Company board, however, he could hardly expect to hold such beliefs.

He said quietly, "You seem to have the illusion that New Arizona is a democracy. It isn't. The New Arizona Company governs this planet, and it governs you. There are signed contracts to prove it."

Somebody from behind him said, the voice more soft than that of the half-drunk colonist. "Governments have been changed before. Particularly overly repressive ones."

Rog and Ferguson turned.

Jeff was grumbling lowly, "We better get out of here, laddy."

Rog Bock confronted Hugo Miltiades, the short statured senior doctor who from the first had been active on the various committees that had been appointed to represent the colonists. Behind him were half a dozen companions, none of whom looked as though he had been drinking. Rog had the feeling that they had just come from a meeting.

He had still to maintain his counterfeit position. Rog said, "Are you suggesting such changes, Doctor? Ben Ten Eyck, the chief of security, would be interested."

The doctor said coldly, "Thus far I have made no suggestions at all, Citizen Bock. As you say, I, too, am under contract to the Company. So long as my fellows do, I'll abide by its rulings. I was merely pointing out what has been under-

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stood by students of government since the days of Machiavelli."

"And that is?"

"That a government cannot rule indefinitely in the face of the active opposition of its people. Therefore, the people always get a government that lies within the limits of their toleration. So while New Arizona has started out with an oligarchy, who knows what it will be in ten years so far as its socio-economic system is concerned—free enterprise, democratic or otherwise, a technate, a communist state, a socialist, syndicalist or anarchist commonwealth? Who knows? And now I bid you good evening Citizen Bock." He turned, and followed by his group moved away.

Rog and Ferguson looked after him.

Jeff Ferguson finished his glass and said, "It's the nardy little fellows that cause all the trouble in the world, laddy. We better get out of here. Half these flats don't know what the Doc was talking about, but they're for him anyway, and if they—"

The lights suddenly went out and somebody yelled, "Let's get him! Get the funker and put an end to his curd!"

The confusion was immediate.

Shouts, screams, the breaking of a piece of furniture, the shattering of a bottle. The blare of a horn from the band—evidently a solo attempt of one of the musicians to bring order. An attempt lacking co-operation from his fellows, who, from the sounds emanating from that end of the room, were making a beeline for the great outdoors and safety for themselves and their instruments. There was a rushing and a knocking, and whoever had turned out the light had done those on mayhem bent little service.

Ferguson grabbed Rog roughly by an arm. "Come on, laddy, let's get out of here. Too many of them, though I wouldn't mind breaking a few of these nardy bottles over as many heads."

They headed first for the front entry through which they had come possibly a half hour earlier.

However, the engineer, who was leading, came to a halt a good twenty feet before that orfice. There was a line of colonists, shoulder to shoulder, peering into the dark of the tent.

Ferguson grunted. "That's not it. This shindig's organized, laddy. I didn't expect that. I thought most of these yokes were pals of mine."

"They're after me," Rog growled at him. "Come along this direction." He led the way back across the dance floor, shoving through confused couples who were largely ignorant of what was going on and were waiting for lights and music to return. There was some scuffing, some fighting, but most of it came from the vicinity of the improvised bar, or from the front entrance.

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Followed by the chunky engineer, Rog leaped to the bandstand, stumbled through the discarded chairs there, found the small tent opening through which the musicians had scurried, and pushed through.

He whispered over his shoulder to Ferguson, "You know the way out of here. You better take over."

Ferguson was chuckling half-drunkenly about something or other. "O.K.," he said. "This way. Down this back way."

Out of the shadows of the dance-hall cum barroom tent the light of the stars was sufficient for Rog Bock to make out that his companion was laden down with several bulky objects.

"What've you got there?" he demanded.

The engineer chortled. "Loot," he said. "That'll teach 'em to turn out the lights when Jefferson Ferguson's around the bar. Here, you can have two."

Rog Bock closed his eyes in simulated pain, but accepted two of the liter sized bottles. Ferguson retained two more. How he had managed not to drop any, in the roiling mob in that tent, Rog couldn't figure out.

They could hear shouts from behind them and increased their pace.

Ferguson who suddenly sounded more sober, growled, "They really want us. I didn't know things had gone this far, already."

"It's me," Rog told him, unhappily. "I don't think they've ever forgiven me killing that poor cloddy with flap. I couldn't help it, but that doesn't make any difference."

Ferguson came to a sudden halt. "Listen," he grumbled. "I know this tent town like I know my hand. I supervised erecting most of it. You keep running along this line of tents, see? I'll duck off another route and led 'em up and down a bit while you get clear."

"We better stick together," Rog began, but the engineer was off, his steps only barely showing the results of the amounts of berry liquor he had consumed.

There was nothing for it but to follow the other's orders. Rog dropped his bottles and ran.

Tent City, as they called it, sheltered over two thousand persons and consisted of, as well as sleeping quarters, structures for bathing, latrines, cookhouses, messhalls, laundries, nurseries, clinics and the dozen and one other establishments necessary to provide the necessities of even simple existence for civilized man. In short, Tent City was not small.

It was not surprising that the sounds of the pack after him, combined with his inadequate knowledge of the layout of the temporary town, soon had him confused. Confused, then lost.

Only the long years of training in the arts of death kept Rog Bock from panicking at this point. He

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was the quarry, where largely he had trained himself to act as hunter, but he did not feel completely at a loss, sticking to shadows, ducking around corners, hurrying through shaded spots.

The sounds of the chase grew and it came to him that the numbers of those who pursued had been augmented considerably since he had left the dance hall tent. Evidently, the word had spread. And evidently the anti-Company aspects of the colonists were considerably stronger than anyone on the board had suspected. They were out, he realized now, for his blood, safe in their knowledge that Ten Eyck and his armed security force were unaware of the fact that one of the so priceless board was on the run through the improvised town.

Twice he fought.

On both occasions it was with small groups seeking him out away from the larger mob—or was it mobs?—which were milling up and down the main streets, some equipped with electric hand lights.

Twice they flushed him, both times by accident, and the advantage of the surprise was with him. Evidently, his average build, his retiring nature, had given them a false impression, in spite of his conquest of the berserk space flap victim. Evidently, they thought him a weakling, fleeing for his life, without resources to defend himself.

A few of the mob, at least, were disillusioned.

He had reacted immediately on the first group when they had stumbled upon him as he had paused to take stock of his position, to try and figure out his way back to the *Titov* and security. He had grasped the leader, split seconds before that one had realized that the quarry had been flushed and turned on them. He grasped the other with both hands by the jerkin, half spun and threw the man hard over his hip and into the two who followed. The three went down with a yelping of fear, and Rog Bock was away again, running low.

The second time the group had been larger, and evidently composed entirely of those who had been at the dance hall when the trouble began, since the scent of drink was heavy in the air, and their reactions were on the sluggish side.

Rog plowed on through, moving like a quarterback in a broken field. He held his hands fingers together, spearlike, and as he busted through, shot them stiff-elbowed, into stomach, belly, solar plexus, throat or groin. He left devastation behind him, and little desire for further pursuit.

But the main hunt was still on.

He came to a sudden halt. One mob was before him, and the sound of another mob behind. There was no time for thought, he ducked down a side alley, cursing beneath his breath at the multiple guy ropes which he must hop, skip and jump over.

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Then there were shouts before him again, and even closer now.

Half Ten City must be up and in on the pursuit. Shouts of the men mingled with shrill hate-filled screams of their women, and the excited yells of teen-agers. From the elements of frustrated rage in their cries, it came to Rog Bock that they had chosen this outlet to let off a steam that had accumulated through every aspect of their experience thus far. The double dealing contracts which had all but enslaved them. The inadequate facilities for their passage. The lack of proper food and medical care. The discovery that the Company planned not a true colonization but a milking of the planet's resources to the point of devastating it. All this had mounted within them, helpless against that which had been done.

But now they had a victim upon whom to wreck vengeance. A symbol of all they hated.

And he realized at last that nothing would satisfy them but his blood. Not a beating. But death.

He spun to retrace his steps, the path before him blocked. He had to find some place to go to ground. He had been running now, dodging, avoiding, at full pace for over half an hour and needed time for breath. He cursed himself for having left the blaster the captain had issued him back in his cabin. It had hardly seemed the thing to take it into town on an evening of pleasure. He cursed further that he had allowed Ferguson to trade his pocketknife for the berry liquor. At least it was a weapon of sorts.

He could hear the roar of the mob from all directions. How could the *Titov* be unaware of it? What were Ben Ten Eyck and his men thinking of? Rog grunted self-deprecation. They were thinking of their own skins, of course. They weren't about to descend, armed or not, into the darknesses of Tent City during the night. Not their handful against two thousand enraged colonists. They could find out the cause for the rage on the morrow, meanwhile, things were safer in the spacecraft.

Bent double, he paused, his eyes darting. There was literally no place to go, now. Within moments they would spot him. They knew he was cornered.

A voice whispered, "Rog, quick. In here!"

VIII

It was a smallish sleeping tent, the flap being held open by the whispering someone inside.

To have held back, even momentarily, would have been nonsense. He had nowhere else to go. If this was a trap, and most likely it was, then so be it.

He stooped and scurried through.

The interior, of course, seemed jet black, especially now that the flap entry was down again. He

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opened his mouth to interrogate but the other anticipated him with a *"Shhhh."*

A hand touched his shoulder and pressured him down to the floor, which seemed covered with some sort of rug material. No, it was a sleeping bag—one or more sleeping bags.

"Get in," she whispered. He was able to make out now that it was a woman's voice. "Into this one."

There was nothing else. She was in command. Clothes and all, shoes and all, he wriggled into one of the bags.

"Muss up your hair, turn your back to the entry."

He would have thought his hair sufficiently mussed as it was, but he ran a hand over it from back to front, brought the sleeping bag up around his neck and faced the rear of the tent. She had called him Rog, but he assumed that every colonist on the ship knew his name was Roger and that most used the diminutive. Gossip went through the New Arizona colony as it would have any similar group of human beings. Just about everybody knew just about everything.

Of all things, he must have dropped off into a half-sleep. The combination of the unaccustomed drinking and the excess of exercise, and then complete relaxation, all pyramided into a falling away of tensions which led to dose.

Perhaps it was that which saved him. He vaguely recalled the light of an electric torch, his companion whispering a complaint, and then someone outside saying in confused simile, "He's snoring like a log, whoever he is. Leave 'em alone."

And then someone else saying, a sly undertone there, "Sorry to bother you . . . Citizeness Bergman."

It had awakened him fully. Now he said, "They're gone."

"Along with my reputation," Cathy said bitterly.

"I'm sorry."

She breathed a sigh. "You shouldn't be. I think they wanted to kill you. Why?"

He thought about it, his hands behind his head now, still in the sleeping bag, but fully awake. "Not me, I guess, the New Arizona Company. Anybody would have done. Darleen, Fodor, Zorilla, any member of the board, except, I suppose you and possibly Pater William. They just were taking me as a symbol of the whole Company."

"Yes," she said. She held a long silence before saying casually, "It would have been ironic had they taken their frustration out on you."

"How do you mean?"

"What's your real name, Rog?"

"Oh." He thought about it for a long time. "Enger," he said finally. "Enger Castriota."

She held her own peace for so long that he wondered if she had gone to sleep. But then she said quietly, "What happened to the real Roger Bock?"

"I don't know. It was a series of

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flukes that wound me up in his place. How did you know?"

There was a shrug in her voice. "No one thing. Lots of things, probably including a woman's intuition. Remember that I met Bock before burn off, or at least a man claiming to be Bock. He was a dissipated young flat, thoroughly objectionable. I might have forgotten him, if it hadn't been for other inconsistencies. You're obviously not a scion of some wealthy family . . . Enger. You don't know how to act the part. How to order servants around, that sort of thing. Then you have a surprising ignorance of the workings of the New Arizona Company. You obviously weren't in on the correspondence and verbal discussions carried on between Matthew Hunt and his board before the New Arizona took off. You certainly had luck, though. I suppose Hunt was the only single person who had met and knew all the board members. Had he come along, he would have exposed you."

"Yes," Rog said, self-deprecation in his voice. "I suppose I had luck."

He could see well enough in the dimness of the tent's interior that she had come to one elbow, in her sleeping bag, and was staring in his direction.

"But what are you *doing* here, Rog . . . I mean, Enger? I'm confused."

"You might as well continue calling me Roger Bock," he said wryly. "I'm evidently on a wild-goose chase. A wild-goose chase that's managed to extend over a few hundred light-years."

Her voice was soft as though in understanding, though as yet she had no idea of what there was to understand.

He said, finally, "I suppose there's no particular point in not telling you about it. I flubbed it all, somehow. I don't quite know how."

She waited for him to go on.

He said, "Ever heard of a *gyak?*"

"No."

"Neither has hardly anyone else in this day. No one except stymologists, or historians of the southern Balkans, that area once called Albania and Montenegro. Parts of Serbia and Macedonia too, but mostly Albania."

He drew in air, deeply. "More generations ago than you would believe possible, a child in arms, the sole surviving male of the Castriota clan, was smuggled across the Greek border during the cold of a mountain night. They crossed near Konispol and got to the port town of Igoumenitsa. From there a small boat got the party to Corfu and the following day the three spinster aunts who were conducting the retreat of the six-month-old Castriota offspring took him on the ferry to Brindisi in semi-safe Italy. Two years later they were in what were then known as the United States of the Americas, and already his train-

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ing had begun. You see, the women of the Castriota were as indomitable as its men in the conduct of the *gyak*."

He stared up into the darkness of the tent's interior, and took another deep breath. "He had children, but only one son, and the tradition was handed down to this one. And his son, and his. The Castriota never prospered—numerically speaking—but there was always at least one. And each generation anxiously awaited the birth of a male child and the thin ranks of the family elders would consult, renew old oaths, old pledges, and arrange for the teaching of crafts long since forgotten in the mainstream of life not only in the Americas but in Albania as well. The expert usage of rifle, knife and pistol. And to each promising male child would be assigned an adult seeped in the traditions of the Castriotas and of the *gyak*, and of honor, and duty. And each male child knew that the Peshkopi clan lived still, though generations past they had left their origins at the headwaters of the Drin where the black mountains of Albania and Montenegro meet." He was telling the story almost as though reciting it.

There was horror in her voice. "But . . . but you're talking of many generations."

"Yes."

"But hate, against people you've never even seen—"

He said hollowly, "Hate can be handed down from father to son as effectively as any other family heirloom." He grunted deprecation. "And you must remember we bred for it. It was the *gyak* oriented male children who were encouraged, given what support the family could provide, who inherited what family wealth might exist." He grunted again. "Survival of the fittest? In this case, survival of he with the greatest capacity for hate."

She said, "Until at last—"

"Until at last the moment of final vengeance could no longer be put off, as it had been put off for so many reasons for so very long. For generations we had kept in touch with the surviving Peshkopi—unbeknownst to them. And finally it became obvious that the *gyak* was either to be finalized or our dreams of revenge were fruitless. Because, you see, the last of the Peshkopi was heading out into the stars where he would undoubtedly disappear, he and his descendants—at least so far as the Castriota were concerned."

"You mean," Cathy breathed, "that the last of your . . . your blood feud enemies is on New Arizona?"

He said wearily, "No. But I was led to believe so and stowed away aboard to find him. Yesterday, I finally gave up, after going through the punch-card files with Darleen, supposedly on a different matter. There is no Peshkopi amongst colonists or crew."

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There was cold in her voice. "What you are saying is that while your fellow men and women here are attempting to build a new world, sacrificing for their future, for their children, you've been skulking about seeking your victim to assassinate."

He grunted sourly. "All right, I didn't expect you to understand. Remember, I'm the product of many a generation of breeding for hate. However, it's ended now. I'm the last of the Castriota out on a far planet without resources. My chances of returning while still young enough to take up the hunt again are remote. In fact, I suspect when our good captain finds I'm an impostor I'll be sentenced to hard labor for the balance of my life."

She said, still coldly, "Then your big regret is that you weren't able to complete your revenge."

"I don't know," he said quietly. "You don't spend a lifetime in training without regretting that you were never able to utilize your skill." He laughed bitterly. "I sometimes suspect that was the reason my father, and his before him, and all the way back, were so frustrated, were so able to keep hate alive and pass it to the next generation."

Cathy Bergman said, "You'll undoubtedly be relieved to know that you haven't exhausted all possibilities in your search."

He sat erect, turned sharply on her. *"What do you mean!"*

"I mean that children under the age of ten are not counted as bona fide colonists and are consequently not carried on the ship's rolls. I personally know of several children who are adopted and some bear different names than those with which they were born."

Air went out of his lungs.

She said in high scorn. "So although you weren't able to find your blood-feud enemy amongst the men, you still have a chance that an innocent child is the Peshkopi you've crossed half the galaxy to murder, Enger Castriota."

He had been a fool to reveal himself to Cathy Bergman—an utter flat. Now there were two who knew him to be a fake, Zorilla and Cathy. His exposure was simply a matter of time and then Zen knew what disaster would fall. Face reality, he couldn't count a friend among all on New Arizona, with the possible exception of the alcoholic Jeff Ferguson, and even that sot had deserted him in the maze of Tent City when the pack was on their heels.

But no, it wasn't quite that. She had already known him to be an impostor. His mistake had only been in revealing his true identity and his purpose in joining the s/s *Titov* in its journey of colonization.

Thinking back over what she had said, he realized what he had told her must have seemed cold-blooded in the extreme. She had no idea of the actuality of the *gyak*, of the sto-

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ries that had come down through the family about the raids at night. The Peshkopi surrounding mountain homes and setting them afire, shooting down the occupants, men, women and children as they attempted to flee. Of torture and ambush, of burned fields and stolen livestock. Of the decimation of a clan once numbering into the hundreds by every means of destruction known in the mountains of Albania.

No, she knew nothing of such stories as those he had been raised upon. Stories that even now brought the red haze to his eyes as he remembered them. She didn't know and could never know the heritage of the *gyak*.

He had remained in her tent for the balance of the night, both of them sleeping fitfully. The sounds of the mob, working up and down the streets of tents, had slowly faded away as it became obvious even to those who were bemused with drink that their quarry had given them the slip.

They had spoken no further other than her explanation of how she had managed to rescue him. The tent she occupied was one that had been assigned to her by the colonist committee for using when she remained late into the night at Tent City and didn't wish to make the trip back to her quarters on the *Titov*. She had heard the sounds of the mob, and, not understanding their significance, peered out through her tent flap. Twice she saw him passing, running, and twice she saw elements of the mob, in pursuit. The third time he passed, she recognized him and the situation as well and called. The rest was obvious.

In the light of morning, he had openly left the tent and started back for the spaceship.

Those colonists who were up at this hour avoided meeting his eyes as he passed. In the excitement of the chase, the night before, they had been athirst for his blood. But the light of day was another thing.

Funkers! he told himself. Leslie Darleen had been right. Slobs. Malcontents, nonconformists, ne'er-do-wells who weren't able to make the grade at home and had shipped out to a new world in the hope that things would be easier.

Pioneers! Frontiersmen!

Ha!

He met Jeff Ferguson, Ben Ten Eyck and a squad of twenty, halfway back to the ship.

Even at a distance he could see the first engineer was in a fury. As he came closer, he found out why.

The other's eyes were still red—Rog suspected he had done away with the balance of the stolen bootleg liqueur—and he obviously hadn't been to bed. Neither, for that matter, had the pettish looking Ben Ten Eyck, though his expression made it clear that it wasn't his fault.

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When Rog approached, the chief officer bit out a command and his men came to a snappy halt and grounded their blaster rifles. Rog noted, somewhat to his surprise, that all of them were not former crew members. Ten Eyck was obviously recruiting some of his bully boys from amongst the colonists.

Ten Eyck rasped, "You're all right, Citizen Bock?"

Jeff said, wringing his hand, "I've been at 'em all night, Rog. When I realized you'd got mixed up and hadn't got away, I ran all the way back to the nardy ship. This cloddy wouldn't budge until dawn, the funker!"

Ben Ten Eyck took the engineer in coldly. "You'll remember, Mr. Ferguson, that I rank you."

"You rank curd!" Jeff blasted, glowering up at the taller man. "We're not officering the *Titov* any longer, Ten Eyck. And so far as New Arizona is concerned, you own one nardy fifth of one nardy share of a nardy seat on the nardy board, and so do I. Where do you get your high and mightiness?"

Ten Eyck, obviously inwardly boiling, turned back to Rog Bock. "Our descending into Tent City in the middle of the night might have precipitated a riot. At this point some of the less responsible colonists are lacking in the discipline we're going to have to enforce. Besides, we weren't sure where you were. Perhaps you weren't even in the area."

"Where else could he've been?" Jeff growled, aggressively.

Ten Eyck ignored him.

Rog, still weary from a night less than restful, nodded and turned to head back to the *Titov*. Behind him he could hear Ten Eyck barking new orders. Jeff Ferguson fell in step with his drinking companion of the night before and chortled.

He said, "How'd you manage to get away, laddy?"

Rog said, "I met one of the colonist women and she dragged me into her tent. I spent the night there."

The engineer stared at him in wide-eyed admiration. "You did *whot?* Zen, laddy, does she have any friends?"

Rog said glumly, "If so, I'm evidently not one of them."

Ferguson tried to assimilate that as they walked to the spacecraft, since he didn't speak further.

Rog Bock had planned on a thorough refreshing and a change of clothing but his way led past the ship's lounge and a voice barked at him in passing.

"Citizen Bock! Please. And you too, Ten Eyck, Ferguson."

He entered and looked about. There was obviously some sort of session underway. Standing at his table was Captain Gluck, his eyes characteristically a-glare. Seated about the room were Leslie Darleen, Zorilla, Pater William and two of the senior ship's officers, MacDonald and Kaivokatu.

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Leslie looked up at him quizzically. "Welcome to our happy circle," he murmured.

The captain rapped, "Citizen Bock, I must ask you. Where have you been?"

Both Ferguson and Ten Eyck had entered behind him. Ten Eyck said, "He's been in Tent City."

Zorilla looked down at his huge hands, clenched and unclenched them.

Roy MacDonald said lowly, "How do we know that?"

Ferguson glowered at him. "Because I said so. We went together, last night." He turned the glare to Ten Eyck. "Evidently, the nardy New Arizona police work only during daylight. We barely got out with our nardy necks. Rog had to hide out all night."

The captain was steaming. "We'll get to all that later." His flint eyes swerved to Rog. "There's been sabotage again. This time, it couldn't possibly have been a colonist. Colonists have been banned from the *Titov*. Not even members of the former crew are allowed aboard, save a few of trusted loyalty."

"Sabotage?" Rog said blankly.

The exasperated captain bit out, "The desperate need is to get messages back to Earth offering concessions. It's the difference between raising the capital necessary to completely exploit the planet, or going broke . . ."

Zorilla examined the dark nails of his hands, wordlessly.

The captain went on, in heat, "There's only one element on New Arizona that's opposed to this—the confounded yokes we had to bring along as colonists."

"But what sabotage?" Rog said, still not getting it.

"Citizen Fodor has located oil, gold, tin. We needed only to send one of the lifecraft to the nearest Space Forces base. From there contact could be made with Earth, and contracts sealed. That would have led to new ships coming in, bringing new personnel, new equipment, new supplies—and the boom would have been on."

"The stripping of New Arizona would have been on," Leslie said mildly.

The captain's glare swung to that direction. "And isn't that what we want? Quick returns, overnight fortunes, and then a return to Earth."

"Obviously," Leslie drawled. "I wasn't arguing, old chap."

Ferguson demanded, "But whot happened? Whot sabotage?"

Chief Engineer Kaivokatu took the pipe from his mouth long enough to say sourly, "To the lifeboats, of course. Somebody's gimmicked them up so they're unusable. It'll be months before we can repair them—if ever."

Jeff grumbled, "You keep your nardy paws off those lifecraft. I'll see to the repairs."

The captain banged a fist on the table before him. "Stop jabbering, blast it! First the radio now the

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lifecraft. There's only one answer. Who is it that sides with the colonists? Who is it that's opposed to selling concessions? Gentlemen, we represent the controlling majority of the board. Is there a motion to strip Citizeness Bergman of her privileges?"

Pater William said unhappily, "Gentlemen, we must temper our righteous wrath with—"

Rog Bock interrupted him. "This sabotaging of the boats took place last night?"

Roy MacDonald said, "So far as we can figure, at about midnight. There's no alternative to it being one of the board, and Fodor and the second engineer, Manuel Sanches, are out since they're on a scouting expedition."

Rog shook his head. "Cathy is out, too."

"She can't be," Ten Eyck snapped. "She's the one heading the colonists."

Rog hesitated only momentarily, then shook his head. "I spent the night with Citizeness Bergman in a tent in Tent City," he said. He began to explain the circumstances, when a voice cut in behind him coldly. "Thank you, Roger Bock." She had entered exactly in time to hear nothing other than the last sentence.

They spun to look at her. Rog began to speak, but she cut him off in a fury. "Or should I say, Enger Castriota?"

Curro Zorilla shifted his bulk in his chair and shrugged hugely when the others continued to stare at the girl. He said finally, "We might as well get this over with, now that it's out in the open. Roger Bock was left back on Earth. At the last moment he . . ."

"Turned funker?" Jeff Ferguson blurted. He stared at Enger Castriota. "I mighta guessed something like that. That first night, at the auto-bar. I told you about funkers. And you told me your name was Smith, or something. And I got you back onto the *Titov* without a pass. That's how you got aboard. You didn't have a pass."

Leslie had been chuckling quiet amusement. He looked up at Cathy. "My dear, my dear. Did you really mean to ruin poor Rog . . . that is, uh, Enger? You came in a moment too late. You see, the skipper was about to toss you to the wolves, since you were the obvious candidate to blame for sabotaging the ship's lifeboats and isolating us. But brave pioneer Rog—that is, now, Enger—came to your rescue. Of course, the alibi might be a bit distressing . . . but certainly most believable."

Her face went empty and she turned to Enger Castriota. "I . . . I—"

The captain, who had been holding it in thus far, roared, "What in blasted Zen is going on here! What's going on!"

The surprising thing was not that

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he had been exposed, but that he had lasted in his masquerade so long. The breaks, most certainly, had been his.

In actuality, he had no complaints. The breaks continued to be with him.

In the madhouse that the session of the board had become, he had expected as heavy a fate as could have been awarded him, but it didn't work out that way. Cathy, Leslie and even Zorilla had spoken for lenience. Jeff Ferguson, though swinging only one fifth of a vote, had been most vehement. It was he who threw up to the captain that Enger Castriota had saved his life. Pater William made a final plea for Eyck and MacDonald had held out for throwing the book at the impostor.

In the end, he was even allowed to take the two suitcases of Rog Bock, or, at least, that portion of them devoted to such necessities as clothes and footwear. Bock's private papers and personal belongings not of an expendable nature were taken over by the captain until such day as their owner might claim them.

Enger Castriota was turned out, neither fish nor fowl. He was offered no contract, nor even an equivalent position to that held by the crew members, that is, a free citizen of New Arizona. In fact, he was unsure of his position. And so, evidently, was everyone else, including Captain Bruno Gluck.

Carrying his two bags, he made his way down the ship's gangplank and, with nowhere else to go, headed for Tent City.

The night before he had been the quarry of these malcontented colonists, chased up and down the streets of their improvised town. Now he was going there for refuge.

For lack of other destination, he headed for the tent hospital, the nearest thing to an administrative center the community as yet boasted. He had been here once or twice before, on minor errands. The medical tent had been laid out efficiently, considering the shortcomings of the supplies available to the three doctors the colonists boasted.

He stood at the entry, at an immediate loss, and it was Dr. Florence James who spotted him first. She had been bent over a child stretched out on an army type cot.

She straightened up, pursed thin lips and said snappishly, "Well, aspirin again? A hangover, I suppose. I heard all the caterwauling going on last night, started off by you and that drunken engineer."

Her accusation, on top of everything else he had gone through in the past twelve hours, was too much. He sat down on one of the bags and began to chuckle, then to laugh. He couldn't recall laughing like this in his memory. The tears began to come to his eyes.

Her backhanded slap stung him back to reality.

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She was staring down at him, her eyes taking in the bags.

"What are you doing with this luggage?"

He shook his head, cut off his semi-hysterical amusement and said, finally, "Evidently, I'm *persona non grata* on the *Titov*. I suppose I'm asking for sanctuary."

"Sanctuary!" she blurted, in her feisty mannerism. "But you're a member of the board! You're one of the bloated . . ."

He grinned up at her, then stood again, wiping his eyes with the back of a hand. "That was a false alarm," he explained. "False pretenses. I'm nobody. Not even a colonist, evidently."

Francis Kelly, the quieter of the three doctors, had come up to stand beside Dr. James. His eyes went from Castriota to his colleague, then back.

Without attempting to explain his motivations, Enger told them the story. He was a stowaway. By sheer luck he had stumbled into a situation where he could impersonate a board member, and had. He had been exposed this morning. Now he was at the mercy of everyone involved. He had no shelter, no food. And also no right to present himself at cookhouse or mess hall.

Kelly didn't seem overly excited by it all. He said, mildly, "If you have the gumption, you'll be able to make out. There's lots to be done in Tent City." He grunted. "There's lots to be done on New Arizona. What is your background, your trade?"

"I have none. I was still a student," Enger told him.

"At your age?" Florence James said snappishly.

He looked at her. "I was studying for my doctorate."

"In what?" Kelly said curiously.

"In history. Specializing in primitive society. I . . . well, I expected to teach, eventually."

She snorted. "Primitive society. It couldn't have been chemistry, or medicine, or agriculture. Oh, no."

Kelly said mildly, "A new world needs historians too, eventually. You'll make out." He took a prescription pad from his white jacket and scribbled on the back of it. "Here, give this to Shackleton over in the Number Six Mess Hall. Tell him the committee has ordered, no, say recommended, that you be given food and space in one of the single-men's dormitory tents."

"The committee?" his colleague said waspishly. "Since when are you the committee, Frank Kelly?"

He looked at her wearily. "Do you want to call a meeting to deal with this matter, Flo?"

"Oh, Zen!" she snapped, turning away and back to the child to whom she had been administering. "No. No, let the cloddy freeload on the rest of us."

The quiet spoken Kelly handed Enger the note. He made a motion toward Florence James with his head and said, without a smile, "I'd

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tell you that in actuality under that surface beats a heart dripping with human kindness—but it doesn't. Good luck, uh, what did you say your real name was?"

"Enger Castriota."

"Of course. Well, welcome to Tent City."

Enger thanked him, picked up the bags again and headed toward Mess Hall Six. He had no difficulties in directions. Someone had had the good sense to erect direction signs at crossroads. He wished that he had been able to see them the night before. It might have enabled him to get out of town before ever coming in contact with Cathy Bergman. And then he'd still be in his position of comfort on the *Titov* and in his position of power on the board.

But no, that wouldn't have been the answer. That would only have postponed the inevitable reckoning. As it was, matters had developed in such a manner that he had gotten off far better than he could ever have hoped.

Mess Hall Six, at this time of day, was between meals. Breakfast was over and they were in the process of setting up for lunch.

Enger Castriota asked a youngster who was putting out cutlery where he could find Shackleton and was given directions with a nod of the head.

Shackleton, a heavy pencil in one hand, was bent over a list muttering and checking it off as he read. Enger came up from behind him and cleared his throat.

The other looked up, truculently, and naturally narrow eyes widened. He came to sudden attention, bewilderment in his expression.

For a moment, Enger Castriota didn't get it, but then it came to him. Shackleton was the colonist who had stood next to him and Ferguson at the bar last night, the one who had first started the controversy that eventually led to the fight and to the chase all about town. And Shackleton, of course, now thought of Enger as a member of the board and one of the powers that be on the planet of New Arizona.

This was going to be sticky.

Enger said, "I've just come from Dr. Kelly. Here's a note he sent. I've become . . . I guess I've become a colonist. He wanted you to see I got a cot in a single-men's dormitory and a place to eat. I—"

"A colonist!" Shackleton whinnied. "*You,* a colonist?"

"That's right," Enger said patiently.

"Well, I'll be . . ."

Enger said nothing. The other's eyes had narrowed again.

"You're not drivel-happy?"

"No," Enger said patiently. "I'm lucid."

"You're what? Don't use those fancy words around me, you molly. I'm head man around here, understand?"

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Enger Castriota had put his bags down during the conversation. Now both hands shot out in blurring speed, though still with a certain deliberateness. They were cupped and he banged them sharply, one against each of the other's ears, but in such a way that one hit a fraction of a second later than the other —he had no intention of incapacitating the man.

Shackleton's face went gray and only for a moment blank. He grunted in agony and staggered back, shaking his head, holding onto its sides, widening and narrowing his eyes in idiot fashion. He stumbled backward onto a bench, sprawled on it, holding his head and groaning.

Enger looked down at him compassionately. "Sorry," he said finally. "I get irritated when people call me names. It's a bad habit."

At long last the other stared up at him, accusingly, but, surprisingly, not with animosity.

"What'n Zen did you do?"

"I'll show you some time."

Shackleton shook his head again and came back to his feet. He stared at Castriota for a long moment. "How'd you get away last night?" he demanded.

"I don't know," Enger said reasonably. "I just ran up and down until finally I found a place to hide until morning."

The other grunted, as though in disbelief. Then, "Are you one who works?"

Enger didn't get that.

Shackleton said impatiently, "There's over two thousand in this here colony. Most of them think they're stutes. But they're not, see? They're flats. They spend their time figuring out some fling that'll keep 'em from working. Ten years from now, they'll still be looking for some stute angle. By that time, the guys who really work'll be on top." He hesitated, before adding. "If we can ever get that bunch of curds on the Company board off our necks."

Enger said, "I work. I don't know what I do, yet, but I work."

The mess hall head looked at him quizzically. "I bet you do at that," he admitted. "How about helping out here?"

Enger Castriota hesitated. He realized that those who worked in kitchen or mess hall ate better than did anyone else. And he suspected, from what Leslie Darleen had told him after auditing the commissary supplies, that food was going to be a major item in the near future. Hunters and fishermen weren't even beginning to furnish sufficient to replace the inroads on the supplies brought in the *Titov*.

He said, "I'll think about it. Have you got another name besides Shackleton?"

"Ted. What's yours again?"

"Enger. Enger Castriota. Let me think about it, Ted. Let me get organized and look around a bit."

"O.K., you do that. This isn't a bad job for anybody who doesn't

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mind work. And on our own time, after hours, me and some of the fellas are cooking up a little deal for a special kinda nightspot. It'll supply the best food and guzzle on New Arizona."

Enger stared disbelief at him.

Ted Shackleton said, "Oh, not for a couple months yet. Not until some of the gardens start producing, and we get a better lineup on some of the game and fish."

As he spoke, a shadow zoomed overhead, and there was a drubbing and a hurricanlike pressure of wind.

Shackleton led the way, on a run, to the tent's main entry, and stared up. "It's the big floater," he yelled to Enger. "What the Zen're they doing flying it low right over town? They'll blow down some of the tents, the cloddies!"

Enger Castriota, staring up, felt something splash on his hand. His eyes came down, in puzzlement. There was a heavy drop of red. "Blood!" he blurted. "Come on!"

They headed for the make-shift airfield which was located midway between Tent City and the *Titov*. The drumming of the floater had a waxing and waning element in it, as though something was wrong, something missing.

It crushed to a landing in such fashion that had it been a more delicate craft, irreparable damage would have been done. By now, colonists and crew, board members and ship's officers were streaming toward it. Most seemed to be either shouting orders or demands for information.

The slow flying utility craft had left the day before bearing Richard Fodor, the mining expert, Manuel Sanches, the second engineer, and two crew members.

As they pulled to a halt, as close as they could get in view of the crowd zeroing in on the craft, Enger Castriota could make out only one figure in the aircraft's cabin, and it was neither Fodor nor Sanches.

The captain, flanked by half a dozen of Ten Eyck's musclemen, came pushing through, barking angrily at the mob. Another squad came running up from the direction of the hospital, carrying stretchers and supervised by Florence James whose waspish voice was even more effective than Captain Gluck's in clearing the way.

One of the armed crewmen flung open the copter's door and stared in, his face going aghast.

"Let me through, you cloddies!" the doctor bit out, and was obeyed, without question. A silence had fallen on the assembled colonists and their rulers. Something here, whatever it was, spelled tragedy that would affect them all.

Enger watched Richard Fodor go by on a stretcher, his face puffed up beyond recognition, and his body rigid—with rigor mortis, or with what? Was he dead? Behind him, also on a stretcher, was Manuel

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Sanches. The engineer seemed alive, but staring ahead fixedly, as though in shock—or insanity. There was no doubt about the crewman who followed. His face was swollen, as was Fodor's, but the man was dead.

Enger and Shackleton tried to press closer. The second crewman, who had evidently piloted the craft home, was on the verge of hysteria and the captain was having his work cut out, trying to question him.

"Hundreds of them . . . thousands. Little monkey men. With those blowpipes and . . . darts. They swarmed out. Hundreds of them. Like in ambush—"

The captain put a hand on the blabbering man's shoulder and shook him. "What do you mean, *monkey men?* Straighten up, Webster! We've got to know."

Webster shook his head and tried to control his strained voice. "Monkey men. No bigger'n a chimpanzee. Maybe five feet high. Almost naked, sir. But they carried these standards, and blowguns, and something else that threw darts. They must be poisoned."

Ten Eyck had broken through to the center of attraction, as had Leslie Darleen and Zorilla.

Zorilla rumbled, "But there is no intelligent life in the galaxy, except man."

Leslie chortled sourly. "That was the good old days, evidently," he drawled.

TO BE CONCLUDED

THE ANALYTICAL LABORATORY

JUNE 1965

PLACE	STORY	AUTHOR	POINTS
1.	Duel to the Death	*Christopher Anvil*	2.03
2.	The Muddle of the Woad	*Randall Garrett*	2.06
3.	The GM Effect	*Frank Herbert*	2.90
4.	Glimpses of the Moon	*Wallace West*	2.92

JULY 1965

1.	Trader Team (Pt. 1)	*Poul Anderson*	2.12
2.	Soupstone	*Gordon R. Dickson*	2.87
3.	The Adventure of the Extra-terrestrial	*Mack Reynolds*	2.89
4.	Delivered with Feeling	*Lawrence A. Perkins*	3.76
5.	In the Light of Further Data	*Christopher Anvil*	4.51
6.	Though a Sparrow Fall	*Scott Nichols*	4.51

THE EDITOR.

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THE NUTS SHALL INHERIT . . .

Several years ago a "flat-earther" tried to have me barred from the air for explaining, on a school broadcast, that the Earth revolves around the sun. He did not belong to any religious sect or to any of the flat earth cults, but some correspondence showed that he was absolutely sincere and absolutely fanatical in his belief that the Earth is a flat, circular plate with a wall of ice around it.

In times of doubt like those in which we are living, the fanatic has a tremendous advantage in that he knows that he is absolutely right. The religious fanatic gets his knowledge by revelation, or his interpretation of revelation; the "lay" fanatic finds the conviction within him, in a kind of self-revelation. With this knowledge of infallibility goes a knowledge that the world must be purged of doubters, for its own good. Communism cannot tolerate deviationists; the Goldwater camp cannot tolerate moderate Republicans; the Negro rights movement cannot tolerate "Uncle Toms".

In "Commander-1" (Delacorte Press, N.Y.; 1965; 254 pp.; $4.95) the author of "Red Alert" and co-author of the film, "Dr. Strangelove," has drawn a chilling portrait of the fanatic who is in a position to force his convictions on what is left of the world. Peter George, a former RAF navigator, showed us the type in his "General Jack D. Ripper" but there was nothing subtle about "Dr. Strangelove," and we see Commander James William Geraghty through his own eyes, in the journal he is drafting for posterity.

There are two stories in the book, and most comments have dealt only with the superficial plot: the decision of a group of Red Chinese leaders to trap Russia and the United States into destroying themselves, leaving the world to the Chinese. Bombs will be exploded almost simultaneously on Christmas eve, 1965, destroying New York, Moscow and other key centers. But the scheme escalates, and the world goes up in flame and plague.

Meanwhile we have become acquainted with Commander Geraghty, commander of an atomic submarine which is conducting an experiment for NASA under the arctic ice. Three couples are to be cooped up in quarters comparable to a space capsule, then isolated on a tropical island in simulation of a Venus flight. Geraghty has little

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sympathy with the experiment or its civilian experimenters, but the Navy knows best. In his journal he reveals himself as a man of limited intelligence and warped prejudices, immature as a high school sophomore, but able to execute orders efficiently. It is easy for him to convince himself, as contact with the outer world is cut off by the war, that his way is the Navy way.

And then, when the submarine surfaces in the ruined world, Geraghty finds that he *is* the Navy—the ranking officer in a base where a few hundred selected military and civilian personnel have taken refuge. By definition, the Navy is ordained to save the world from itself. By definition, his ideas, however mad, are the Navy's ideas and his edicts are militarily divine.

In Geraghty's case, revealed fanaticism is backed up by military tradition. Whatever the military does is by definition right; whatever the commanding officer orders is by definition Regulation. The details of the tragedy are well worked out; its course is inevitable. When the mad are strong, they can prevail. Perhaps they must prevail. So we dare not let our strong men be mad.

THE "HUGO" NOMINEES

By the time you read this, the 23rd World Science Fiction Convention, in London, will be over, and the 1965 "Hugo" awards for the best science fiction and fantasy of 1964 will have been made. The mails and publishing schedules being what they are, it will be some time before I can report the winners; indeed, as this is written I have just received the ballot with what the English call the "short

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list" of nominees.

The selection of "best novel" of 1964 will be a difficult one. My own choice is Edgar Pangborn's "Davy," for reasons that I've made fairly clear here. However, John Brunner's "The Whole Man"—Brunner's best by far, and an unusually good story of the problems of a powerful telepath—will probably be more familiar to an English audience, and may win out. Cordwainer Smith's first novel of his extraordinary future galactic society, "The Planet Buyer," would be a shoo-in in any other year. Fritz Leiber's "The Wanderer"—*his* first novel in a long time—is the fourth nominee.

Rick Raphael's "Once a Cop" from Analog, which richly and fully imagines the problems of policing traffic on the freeways of tomorrow, is my choice for best short fiction of 1964. Only two other stories made the short list, and only one is a close contender: Gordon Dickson's "Soldier Ask Not" from *Galaxy*. This insight into future warfare and the fragmentation of humanity among the stars is part of the author's huge "Dorsai" cycle of novels, which will encompass past, present and future. The third nominee, Robert F. Young's "Little Dog Gone" from *Worlds of Tomorrow*, isn't in the same league: pleasant, sentimental and obvious.

After a series of "No award" decisions, the Loncon committee had decided to omit the Drama category, but write-in votes put "The Seven Faces of Dr. Lao" and "Dr. Strangelove" on the ballot. The latter should win hands down.

As for the minor categories, Analog is again on the list as best magazine, with *Fantasy & Science Fiction, Galaxy* and *Worlds of If*. Too bad one of the English magazines didn't make the ballot in a year when there are probably enough English readers in the convention membership to give them the chance they deserve. Evidently the readers felt the new editorship hasn't matched John Carnell's.

John Schoenherr's covers for Analog have made him an obvious candidate for best artist. He is competing with Ed Emshwiller, Jack Gaughan and Frank Frazetta—the latter, I am sure, for his covers for Ace paperbacks. Ace, Pyramid, Ballantine and Victor Gollancz Ltd., of London are competing for the best publisher award, and Gollancz may make it unless American readers who haven't read the British books should predominate.

THE DARK ENEMY

By J. Hunter Holly • Avalon Books, New York • 1965 • 190 pp. *• $3.25*

Avalon has published better single books by well established science-fiction and fantasy authors, but J. Hunter Holly is by far the best new writer to appear in its stable. Her first book, "Encounter," is still her best, but this new one makes a good second. It has weak-

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nesses—serious ones—but overcomes them by dragging you along with the story.

The hero, Matthew Tylor, is a Professor of Psychology in a small college. With official sanction, he has been carrying on a blind search for a powerful, controlled telepath who can look into the minds of psychopaths and help with their diagnosis and cure. As the story opens, the project is wrecked by a burst of sensational publicity, evidently leaked by someone in his immediate circle of friends and workers. And while he is trying to trace the leak, he and his fiancée find themselves the targets of a campaign of insane and impossible persecution. Plants are killed behind locked doors, june bugs by the thousands envelop a house, rats appear and vanish as if by magic, and as they fight back, they become the center of full-scale poltergeist harassment.

On the negative side, it is evident to the reader, almost at once, that some enemy is using teleportation and other psionic powers to force Tylor into abandoning his search. Nor is there much question, for long, who the attacker is. But the attack itself is so vividly ugly, the tormented personality of the persecuter becomes of such interest, and the characters are so well drawn, that you can forget these flaws. Motivations are by no means always clear: in fact, it is hard to see why Tylor's rather obnoxious crony, Ev Evans, is brought into the story at all. Maybe Miss Holly simply knows someone like him, or his boorishness may be intended as a distraction.

Be all these as they may, "The Dark Enemy" would make a grand film *if* it were intelligently, adultly produced, directed and played by an untyped cast. When shall we see such shows again?

THE FORGOTTEN DOOR

By Alexander Key • Westminster Press, Philadelphia • 1965 • 126 pp. • $3.50

Here is a very good juvenile, though on a younger level than the Norton and Heinlein yarns. Evidently the author has done two other robot books for still younger readers.

In this one Jon, from a parallel continuum, falls through a "door" into a gulley in the Great Smokies. The crash has blocked his memory, but he retains his ability to communicate by telepathy with animals and to read men's thoughts. After a brush with some nasty mountain characters, he takes refuge with the family of a rockhound. Little by little his memory returns, but not rapidly enough to prevent his coming to the attention of the authorities, who fear and resent anything "unnatural".

This is precisely the kind of SF youngsters in grade school should be offered. Let's hope the author enjoys it enough to give us more.

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ANDROMEDA BREAKTHROUGH

By Fred Hoyle & John Elliott • Harper & Row, New York • 1965 • 192 pp. • $3.50

Fred Hoyle is, of course, the maverick British theoretical astronomer who is one of the proponents and perhaps the best popularizer of the "steady state" theory of the universe, in which matter is continuously created to balance the flight of the galaxies. John Elliott is an author and producer of television plays. The present book is the novelization of a science-fiction serial they wrote and produced for the British Broadcasting Company, and a sequel to their previous book and TV serial, "A for Andromeda."

In that book, you may recall, the authors came up with what may be the only feasible technique for interstellar communication. A message in binary code from a race somewhere in the Andromeda universe gives directions for building a super-computer. Inherent in its circuits are what might be called the instincts and race memory of its creators, so that it is literally their stand-in on Earth. It, in turn, issues instructions for constructing the android girl, Andromeda, who is in a kind of telepathic rapport with it. Finally, sensing an effort to dominate the Earth, one of the scientists who has helped build the computer undertakes to destroy it.

The new book begins with this successful attack, in which Andromeda is nearly killed and after which she and John Fleming become fugitives. They are kidnaped by agents of an international cartel—the kind with which James Bond copes from time to time—and taken to an oil-rich Near Eastern principality, where a duplicate computer has been built from plans stolen from England. Again the dying Andromeda is linked to the computer, this time with the power-hungry executives of Intel to back her up. Again Fleming fights to prevent the thing from taking over the planet. And to complicate things a bit, a few mistakes made in the earlier experiments are threatening to suck the nitrogen out of the atmosphere.

It's pure melodrama, and lacks the meaty idea of the first book, but it must have made far better TV than any "science fiction" show I've heard about in these U.S. of A.

THE UNIVERSE AGAINST HER

By James H. Schmitz • Ace Books, New York • No. F-314 • 1964 • 160 pp. • 40¢

If you read the first two adventures of Telzey Amberdon, the awakening telepath, here in Analog in June, 1962 ("Novice") and May and June, '64 (the serial, "Undercurrents") here they are together in a paperback. If you missed the originals, by all means meet the lady now. She is one of James Schmitz's vigorous, individualistic,

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thoroughly endearing and exasperating heroines, all of whom are Good People.

"Novice," the first third of the present book, introduces Telzey, her conniving aunt, and the crest cats of Jontarou—a greatly gifted, thoroughly civilized, telepathic feline people unhampered by artifacts and treated as big game. The cats find Telzey a useful ally through whom to upset the Establishment. It's a yarn that reads as well the second or third time as the first.

In the longer "Undercurrents," Telzey's psionic powers develop or are developed, by a more complicated situation. Rather than the Universe against Telzey, it's Telzey against the System, the dogged individual against bureaucracy, here represented by the cautiously powerful Psychology Service. As that showdown develops, we may be treated to a piece of escalation such as has not been seen in these pages since the days of Kimball Kinnison's progress through layer after layer of cussedness of the Galactic Evil of Eddore.

NATIVES OF SPACE

By Hal Clement • Ballantine Books, N.Y. • No. U-2235 • 1965 • 156 pp. • 50¢

Hal Clement is the master of the meticulously worked out novel of "hard" science fiction, in which worlds and beings are constructed out of chemistry, physics and ingenuity. His shorter stories have appeared regularly in anthologies, but this is amazingly his first collection.

The book contains three novelettes, all from Astounding: "Impediment" from 1942, "Technical Error" from 1943, and "Assumption Unjustified" from 1946. They are all scientific puzzle stories of a kind that used to be very common here: in each story members of one race try to make contact with or to understand aliens and their works, and have technical as well as psychological hurdles to pass.

My first choice of the three is "Technical Error," in which castaway spacemen find an abandoned or wrecked alien ship and try to find out what its strange controls and other features mean, so that they can use it to get home. Second best, "Impediment": insectlike aliens, in need of arsenic, must contact a human being and somehow tell him what they must have. It should be easy—they're telepathic—but this is a Hal Clement story, and things are never as easy as you'd like in a really fundamental problem.

"Assumption Unjustified" turns on an equally delicate, equally well concealed but obvious point, but the plot is a little too much like this afternoon's sample of soap. Alien on his honeymoon must have a slug of human blood. He gets it—but.

One rule-of-thumb for Hal Clement's stories: they have "happy" endings. Otherwise the puzzle wouldn't be solved.

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brass tacks

Dear Editor:

Thank you—and Richardson—for the article "The Space Technology of a Track Meet." Mainly because it shows somebody else besides myself has been having fun extrapolating sport events to the other planets. I admit it was necessary not to mix in style at all, to get some numerical values, but I can't resist the temptation to discuss style for the high jump on the Moon somewhat.

Now starting the high jump from a deep crouch is impractical on Earth, but on the Moon it should be something else. Supposing the jumper's center of gravity will be one foot high at the beginning of the jump and acceleration when rising up equal to 0.9 g—after all, one can rise from a deep crouch on Earth in an 1 g field, so the difference in Earth and Moon gravity should be attainable as upward acceleration—the jumper's upward speed when his center of gravity is at three feet is already over 10 feet/sec. At this height he would normally start his jump attaining a speed of 18 feet per second.

Because he is already moving when normally he would be at rest, he possibly can not add 18 feet/sec to that 10 feet/s, but even if he maintains the same acceleration he normally would maintain in this phase of the jump, his final speed will be over 20 feet/s, and the measured height of jump just over 40 feet.

Those two extra feet per second mean quite a lot as the height is proportional to the speed squared. On the other hand, if the jumper really could add those 18 feet/s or almost as much, getting for instance a total speed of 26.5 feet/s, he would soar like a bird over a bar at 65 feet (maximum 68 feet).

So to return to Derek in the 40 feet lunar pit: let's hope Derek made it hampered as he was by the spacesuit.

JUHANI RAINESALO
Neulapadontie 3 G 58
Helsinki 92, Finland

Well . . . maybe. But rumor and folklore claim that a cow holds the high-jump record!

Dear Mr. Campbell:

Your very interesting and seemingly accurate article on the phon-

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emator elicits one small criticism, and one suggestion to be forwarded to whoever can use it.

Musical pitch, which certainly results from changes of frequency, is an essential semantic and even grammatical element of hundreds of languages. In some Nigerian languages high, medium, and low utterance determine the "tenses" as past, present and future. The Chinese "tones," of which six in Cantonese are characterized by change of pitch, are remarked upon by everyone faced with that language in restaurant or laundry! In Japanese HAna with high and low syllables, is "nose," haNA, with low-high, is "flower." Westerners hear these tones as stress accents, but they are not that at all.

As one who has taught both Spanish and Japanese, I suggest that the latter with ninety-eight syllables —not phonemes, of which there are only about twenty—is by far the most suitable for experiments with the speaking typewriter.

GORDON T. FISH
2410 N.E. 13th Street
Fort Lauderdale, Florida

And as several other readers pointed out, the educational people have finally developed a phonetic alphabet for English, which they are currently using to teach children how to read. It has no upper and lower case problems, either!

Dear John:

Mr. Wallace West, author of "Glimpses of the Moon"—Analog, June 1965—does not know his geography. His story is based upon the extrapolation of common law with respect to land into space whereby a landowner has title to a wedge of Terra down to the planetary core and upwards to infinity. If ownership of the Moon resides in common with those countries over which the Moon passes, the Soviet Union does not at this time have any claim to the Moon.

According to Edward A. Fath —"Elements of Astronomy," McGraw-Hill, 1955—the Moon's orbit swings 5° 9′ on either side of the ecliptic. The ecliptic in turn swings 23° 30′ north and south of the equator. The Moon, therefore, travels over a zone on the Earth running 28° 39′ north and south latitude. Therefore, the Moon does not pass over the Soviet Union whose southmost point is the town of Kushka on the Afghan border at a latitude of just a shade over 35° N. The Moon does pass over the United States—over the states of Florida, Texas and Hawaii.

I quote Robert A. Heinlein who

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had a character state in "The Man Who Sold The Moon"—Shasta, 1950—"Russia does not own a spadeful of dirt south of 29-North!"

As far as I am concerned, this blew the whole yarn. A science-fiction writer is supposed to do his homework, because there are dirty so-and-so's like me who will catch mistakes.

G. HARRY STINE

New Canaan, Connecticut

Maybe they'd annexed Cuba by then?

Dear John:

As a young man, reading "The Adventure of the Norwood Builder"; "The Hound of the Baskerville's" and other lurid tales by Doyle . . . I never dreamed that one day I would come upon my deductive hero in his "dotage" coping with E.T.'s. Can't express how much I enjoyed Mack Reynolds' tale. Nor how many times I shall reread it. This is just my way of saying that for the July Issue, Mack Reynolds and his "The Adventure of the Extraterrestrial" takes a great big whopping ONE in the An-Lab for me. And that depressive little short by Scott Nichols "Though a Sparrow Fall" rates second. (Shades of Arthur Clarke!!!) "Soupstone," by Dickson, rates a three and Anderson's "Trader Team" comes in a fourth. This thing doesn't come on as strong as Poul Anderson usually does. Howcum? And, just as an aside; how does Poul pronounce his given name?

Regarding your keen editorial: Watch it bub! You'll wind up being investigated as Heinlein was once for his "Blow-ups Happen" remember? All joking aside; your pages are the first that are read, not only by myself, but three other avid readers of this most excellent magazine. I don't recall when I first became aware of your "Editorials" (which are the most succinct, pungent and precise observations I have had the privilege to read)—but I would very much dislike an extensive future without this little gem that goes on the stands every month under the title of Analog.

And incidentally, how about a vote clip-out somewhere in these pages for the An-Lab. Would make voting on the better stories a bit simpler for us lazy folk. At any rate, keep up the excellent work. And long life to you!!!!!

JAMES C. DIXON

College Park,
Maryland

Most of the readers show a strange dislike for clipping their copies of Analog.

Dear Mr. Campbell:

Well, it took twenty years of reading ASF to produce this letter, but I feel that now's the time to do it.

Perhaps a short statement of my

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scientific background will help to make the reasons for this letter a little clearer. I obtained my B.S. with a major in chemistry, concurrently with working in biochemical research. By the time I had obtained my degree, I decided that there was no real room for advancement in the physical sciences. Let's face it, the sheer cost of the apparatus necessary for chemical research consistent with the culture base effectively precludes the existence of the basement scientist—except for some very notable, and persistent exceptions. The attitudes of large corporations, which are contract and product oriented, and large universities, which are grant oriented, precludes any intensive research along personally satisfying lines. So I moved into the social sciences—namely clinical psychology.

Now psychology is a nice, non-science, whose position is about the same as the alchemist's a few hundred years back. No matter what the intro textbooks try and tell the student, psychology isn't really more than a hundred years old. . . . Of course, to attract students and grants, psychology must present itself as a science more rigorous than the physical sciences. I might get into *that* later.

The epitome of the clinician's art is exemplified by the psychoanalyst. Rigorously schooled (six years after internship), the analyst practices the purest form of Freudian therapy and uses something very much akin to esp every single working day. Theodor Reik calls it the "third ear" and specifically states that it *isn't* esp, but he really doesn't know what to call it. Suffice to say that the analyst, and also we lesser breeds of clinicians seem to be able to know exactly what is going on in a patient's mind at certain times.

The why of this phenomenon is what we don't know. Reik, moving along the traditional Freudian pathway, feels that it is the operation of free associations within the analyst. Through my own experience it takes the form anywhere from a vague knowing to an absolute certainty.

This phenomenon might be easily explained by the use of the term "empathy." Sure, this must be the answer—the therapist is capable of "empathisizing" with the patient. But just try and define the term. Sullivan stated that there was an empathic relationship between mother and infant, but the only way that he could explain the term was by saying that it seems to function like telepathy, but wasn't. Or was it?

Now, if it seems like I'm saying that the psychologist, or psychiatrist, or psychoanalyst are all busily using some psi phenomenon and are all quite aware of it, you are going to be wrong. The therapist is quite unaware of it. In fact, he denies it because, unless he is he-

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retically skeptical, the existence of psi phenomena have not yet been demonstrated sufficiently to warrant their consideration. The therapist explains what happens in terms of experience, wide knowledge of individuals, and self-insight. But how come an ex chemist like myself, with less than a year's experience in therapy, can experience these same kinds of things?

Let's assume, in order to ease the minds of those who might be uncomfortable with the idea that psychologists *et al* are espers—and by the way, the absolute certainty that others can read one's mind is fairly typical of the psychotic disorders—that "clinical intuition" is merely creativity. Let's assume that it is merely the ability to correlate a considerable number of related and non-related pieces of information and come up with a meaningful synthesis. In this case I tend to refute your statements concerning creativity in the April editorial, for here is creativity operating all day long, continuously, albeit for only a small number of specially trained individuals.

But, supposing that "clinical intuition" isn't creativity. Then perhaps it's still another "familiar mystery".

This letter is far too long, but I'd like to bring up another point with regard to creativity. Psychology has been studying creativity for a number of years now, and some fairly interesting and fairly useful tests for creativity have been developed. As a matter of fact, methods have been devised for bringing out creative abilities in individuals who appear to be noncreative. Although we still don't know what it is, we are able to manipulate it to a certain degree and, even though manipulation does not imply knowledge it is, perhaps, an initial step in that direction.

MARK SCHULZINGER
6791 Meadow Ridge Lane,
Cincinnati 37, Ohio

The techniques used in studying and developing creativity might work for psi, too. My point was that standard objective-science methods wouldn't work for either!

Dear Mr. Campbell:

After reading your earlier editorial on "The Extremist," and some of the letters you received in reply, it was interesting to see a science-fiction story present some facts that are otherwise fairly well suppressed, or more correctly, completely ignored.

I am referring to Mack Reynolds' story, "Photojournalist," in your February 1965 issue. It was quite refreshing to see Macks' presentation of the Aztec Indians, in their true history, as published by Dr. Lewis Henry Morgan in "Ancient Society," and other works during the last half of the 19th century. Dr. Morgan spent years studying the Indians, of both con-

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tinents, and their institutions. "Unfortunately" he came up with the same concept of changing institutions, and an independently conceived "materialistic conception of history," formulated by Marx a quarter century earlier. For this he is relegated into oblivion by our universities, except his name, as "The Father of American Anthropology."

All he did was disprove our whole concept of the Indian; the idea of "hereditary chiefs and nobles," and the idea of the Aztec and Inca "Empires."

If the only way truth can be expressed in our slowly being censored society is through works of science fiction, let it be. And bravo to the authors like Mr. Reynolds that have the courage to express the truth.

Jerold Nachison

211 Pollock B,
University Park,
Pennsylvania 16802

There is an inescapable tendency for men to interpret what they see in terms of the things—and institutions—with which they are most familiar.

Dear Mr. Campbell:

I recently subscribed again to Analog, it is my wife's first experience in reading Analog, and she is enjoying it very much.

Our first issue was the January 1965 issue Vol. LXXIV, No. 5. By some slight mistake we received two copies of the January issue. We received also a copy of the March issue, but no February issue.

We are hoping that you might still have a February 1965 issue around which you could forward to us. We will gladly pay for it if necessary, simply enclose the bill if possible, or permisssible.

We especially would like the February issue because of the serial "The Prophet of Dune."

The reason we have had to wait so long in letting you know of our lacking issue, is that it takes from three to five months to receive copies of Analog out here in the highlands of New Guinea.

David T. Houser

Laiagam via Mt. Hagen
W.H.D.
New Guinea

Wonder why he doesn't just pick it up at the local newsstand . . .

Dear Sir:

Could Randall Garrett tell us how Walter Gotobed, Henry Lavender, Tom Wilderspin and Harry Venable came to be in the service of the Duke of Kent? Their surnames are of East Anglian origin which leads me to believe that there may be an interesting story behind their leaving the fens. Perhaps some research into the family history of the Duke of Norfolk might be valuable.

In our time stream the eldest son of a duke usually bears the courtesy title of marquess; but per-

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haps in John the Fourth's empire this custom had been dropped.

For the Analytical Laboratory:

The Muddle of the Woad—1

Duel to the Death—2

Others unrated

It may amuse the editor to know that the reading of his classic story "Who Goes There?" to a midnight crew on an isolated mountain top radar station in Quebec nearly disrupted the Air Defense System in the days before machines entirely took the place of men. Those old radar towers were eerie enough without an operator having to wonder of the blob on the next scope was likely to turn into something rich and strange. And when the relieving crew turned up blizzard-blue it was easy enough to think that they might be blue from something else entirely.

J. ELEANOR DAVIES
2536 W. 4th Avenue
Vancouver, B. C., Canada

Well—that was the effect I intended when I wrote "Who Goes There?"

Dear Mr. Campbell:

As a reader of Analog since its inception I have long been an admirer of your advocacy of the principle that no idea should be condemned before it has been thoroughly and impartially tested.

Like millions of other people I am deeply interested in man's effort to venture into space, and primarily to visit the Moon. Naturally I have read everything I could lay hands on relating to the problems involved and the success so far attained. One of the great remaining doubts about man's ability to land on the Moon seems to be the nature of its surface—whether it is formed of rock or an unknown depth of powdery substance.

Having in the past had some experience in the use of explosives while prospecting on the Kalgoorbe gold field, it occurred to me a long while ago that the effect of a small rocket with an explosive head, fired ahead of the cameras of a Moon rocket, would reveal a great deal about the nature of that area of the Moon's surface. The displacement of large fragments or a cloud of dust—or anything in between—would surely be recorded in fairly close up photographs and would give some clues to the nature of the surface. I guess that NASA gets countless suggestions from crackpots, but if you think this suggestion has any merit you can pass it on to them.

A. E. RICHARDSON
The Parliament Of The Commonwealth
Parliamentary Reporting Staff,
Canberra, Australia

Sounds like an excellent idea!

Trouble is, it would necessarily obscure the view of the camera—and during the last few seconds of maximum detail resolutions.

I think the NASA people are torn two ways!

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continued from page 7

was grinding out stuff at the rate he did. No soul in it. Just commercial hack stuff, written to please the public—a commercial writer if there ever was one.

Oh, by the way—he was commercial in his own time; he's also the only man who's ever succeeded in having five plays on Broadway at the same time.

Pretty good showing for a commercial hack who's three hundred years out of date.

Also, the Litterateurs know that Sex is the One Great Motivation. (Freud told them so.) The Real, Human stories, the Modern Literature, of course, has to do with things that touch the heart—or something, anyway—of the Common Man. Things that he can understand and empathize with. Real literature then, should deal with the things Everyman understands and feels—and that means Sex In Suburbia.

It might be interesting to see how well the literature that has passed the real test—the test of survival across the generations—complies with the Litterateurs' opinions as to what Literature is.

The first example we have to offer is one that has somehow managed to survive rather remarkably. With no group dedicated to its preservation, it has survived some three thousand years, and managed to leap every cultural and linguistic barrier time and space have imposed. It's interesting to pick up a pocket-book edition of "The Odyssey" at a jet airport, or near a space-vehicle launchbase, and realize that that story was written by late bronze-age barbarians for bronze-age barbarians. And yet touched some *really* deep motivations that must be truly-and-not-somebody's-theory basics in all mankind. Anything that can stay *popular,* from the days when a King's palace was a mud-floored hut with a tree growing up through the bedroom, to while away the time for reporters sitting around waiting for a space-launch—man that *has* something!

But it just can't be literature. Practically no sex motivation. No mention of suburbia. And no Common Men, either. Nothing but heroes. That can't be Literature . . . can it?

Any Litterateur of the Ingroup can assure you it isn't real Literature. Without those Common Man touches, without adequate Sex—it simply won't last.

And since Sex is the One and Only Motivation of interest to mankind, Shakespeare's hackwriting simply won't hold any enduring appeal. Where's the sex interest in "Hamlet?" Why, Ophelia's a pretty flimsy sex symbol to begin with, and the author throws even that feeble interest out early in the play.

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And "Julius Caesar?" Another sure flop. No sex, and no Common Men in it, either.

Ain't it strange that these untutored non-litterateur hacks who didn't know how necessary Sex and the Common Man were to enduring literature somehow managed to make both a popular success—and an enduring one? Could it be that the self-appointed Litterateurs, though they are in such perfect agreement, are, in fact, off their ever-lovin' rockers?

That perhaps Achievement, personal worth, is a more universal motivation of Man than hustling the handiest female into bed? That men would, actually, rather identify themselves with Heroes and Gods than with some other incompetent and unsatisfied slob like themselves?

The Apotheosis of the Common Man—the great doctrine of the current Literature.

Look—how long would the Common Man last if he were suddenly snatched into a real and dangerous situation? Let's drop him suddenly back three hundred years, say, right here in America. How well do you think that well-adjusted bearings salesman, or plastics technical representative, dress-designer or drugstore clerk would make out if he were dumped precipitously into 1665? If he found himself near a horse—unlikely—he couldn't ride it. He's probably never even seen a musket, and certainly couldn't shoot one. And he's definitely not in condition to outrun a Mohawk, Iroquois, Apache or Cheyenne warrior. He wouldn't know how to skin and dress out a deer, if one dropped dead at his feet—and most of 'em wouldn't be able to hold onto their stomachs well enough to eat if some kindly colonist took the trouble to dress it out for him.

Common Man? The only kind of man who could survive would be those who'd had some training—and thereby become *un*common. And who the hell *wants* to be a Common Man? Who actually wants to identify with an ordinary, oval peg in a slightly undersized oval hole?

From the record of what does-in-fact—*not* in Litterateurs' theories!—endure across generations, men are not ingrown, undersized, security-seeking sex-only-motivated "Common Men". They want at least to dream of something bigger, stronger, and better than they themselves are, and than the narrow pockets of their own life.

For those who insist that Sex is the Only Real Motivation in real Literature—get a list of the writings that have in fact endured more than one and a half centuries—roughly six generations—and check how strong the sex motivation in those stories are. Is it a true, dominant factor? Or is loyalty to a cause, dedication to an ideal, defense of a clan, or the achievement of a dedicated goal the dominant motiva-

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tion? How many of those enduring tales have as their central characters men who could be identified with what we know as "the Common Man"?

Simply looking at what actual history has done to styles of art, it's glaringly obvious that all the modern Literature that's being properly certified as Literature by the Self-Authorized Litterateurs will most assuredly drop dead. Fast, too.

From what I can make out of the history of enduring writings, the following standard ideas of the Litterateurs are completely false:

1. The only *real* writers are those who polish their work, writing and rewriting, going over every word, and spending months at it.

Anybody around want to be a high-speed hack like Shakespeare? And if you think he's an unique case—check the total wordage output of other writers of truly enduring stories.

2. Sex is the Only Important Motivation.

As in "Paradise Lost," perhaps? Incidentally, Milton was a real word-grinder; he was a professional public relations man, and wrote speeches, news-releases, all sorts of stuff at fantastic speed—even after he went blind. And I, who have done all my writing with a modern typewriter—currently electric powered—wonder *how* they could have achieved such fantastic word output with one of those clumsy quill

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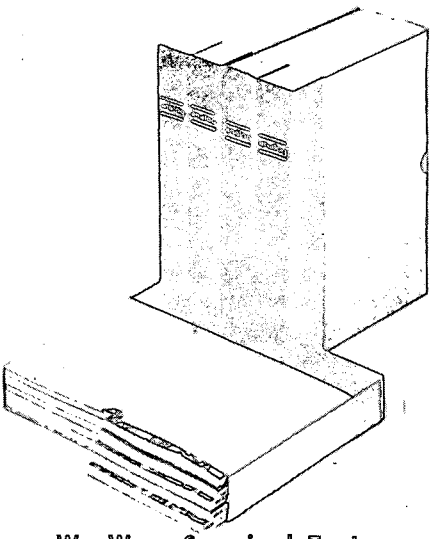

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pens. Think of the air-resistance a feather has at the speed those old word-slingers were grinding it out!

3. Only stories based on the Common Man and his problems and ideas make Great Literature.

And that's why the oldest enduring stories are all legends of great heroes, like Odysseus, Beowulf, Hercules, or Roland, Siegfried, and King Arthur.

4. It takes deep delving into the individual's psyche to make a great and enduring story.

That's why so many of Robert Louis Stevenson's yarns remain widely popular, with kids and adults, no doubt. There's so much soul-searching stream-of-consciousness, such deep analysis of *why* Long John Silver chose the hard life of a pirate.

The one idea the Litterateurs have that is really sound is the one they completely ignore—that real Literature must endure beyond its generation.

Maybe when they get around to using that as a test—it involves an anathematized admission—they'll begin to be able to teach students how to *make* literature.

To accept the test, however, they must acknowledge that untrained, non-litterateurs have opinions worthy of respect. I.e., that public approval is a goal worth seeking—that winning a popularity contest extending over several generations is more meaningful than winning the approval of the current Inner Circle of the Mutual Admiration Society.

Wouldn't it be interesting if, somewhere, some college set up a course that actually trained students how to be successful authors—turned out graduates who had a higher probability of successful writing than an Annapolis graduate, or a Ph.D. in nuclear physics from Cal Tech?

As of now, over the last quarter-century of editing, I've gotten more printable manuscripts from Cal Tech Ph.D.'s than from Harvard English Lit graduates. And Harvard Law School turns out more good writers than their English department.

The present setup is as ridiculous as to have Harvard's Latin scholars filing more chemical patents than M.I.T.'s graduates do, and Princeton archeology graduates winning spaceship-design contracts away from Cal Tech's honor students.

Something is most egregiously wrong with the present theories of what makes Literature. If ninety per cent of the ships designed by Naval Engineering graduates sunk at launching, and ninety per cent of the bridges designed by Civil Engineering graduates collapsed in the first windstorm, the schools teaching those courses would collapse and sink with equal rapidity.

How come they keep on turning out Literature graduates that can't sell stories?

The Editor.

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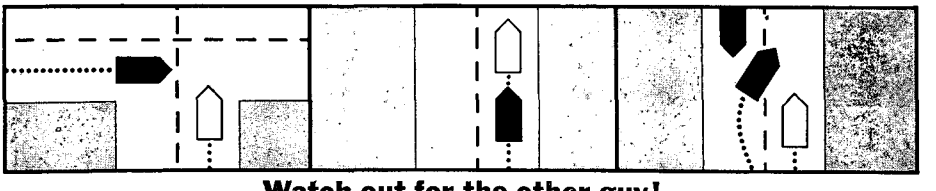

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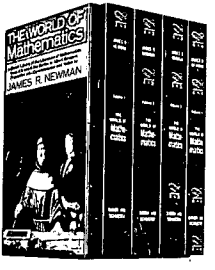

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